IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
Attorney Docket No. 05-518-B

In re Application of:	)	
	)	
Kwang Seok KANG	)	Examiner: TBA
	)	
International Application No.: PCT/KR05/000141	)	Group Art Unit: TBA
U.S. Application No.: 10/585,838	)	
	)	Confirmation No.: 7868
International Filing Date: January 14, 2005	)	
U.S. Filing Date: July 12, 2006	)	
	)	
For: Structure of a Management Information Base Communicated Between a Network Management System and an Agent of a Network Element	)	

Mail Stop PCT
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

PETITION UNDER 37 C.F.R. § 1.47(b) BY PERSON HAVING PROPRIETARY INTEREST TO FILE APPLICATION ON BEHALF OF INVENTOR WHO CANNOT BE LOCATED

Dear Sir:

Pursuant to 37 C.F.R. § 1.47(b), UTStarcom, Inc., the owner of *UTStarcom Korea Limited*, and the assignee in fact of the above-identified patent application, submits this Petition and respectfully requests the U.S. Patent Office to allow UTStarcom, Inc, to make the Application on behalf of inventor Kwang Seok KANG, who cannot be located.

This Petition is being submitted with:

(i) Declaration and Power of Attorney signed by Robert J. Irvine, III, a person authorized by UTStarcom, Inc to sign on its behalf;

(ii) Statement Establishing Proprietary Interest By Person Signing on Behalf of Nonsigning Inventor and Statement Under 37 C.F.R. § 3.73(b);

05/01/2007 JBALINAN 00000065 10585838
01 FC:1463 200.00 OP

(iii) Declaration in Support of Petition Under 37 CFR 1.47(b) By Person Having Proprietary Interest to File Application on Behalf of Inventor, signed by Joo-Young Kim;

(iv) Memorandum of Law in Support of Petition Under 37 CFR 1.47(b) By Person Having Proprietary Interest to File Application on Behalf of Inventor, including exhibits, signed by Joo-Young Kim; and

(v) Declaration in Support of Petition Under 37 CFR 1.47(b) By Person Having Proprietary Interest to File Application on Behalf of a Nonsigning Inventor, including exhibits, signed by Jiwon Lim.

The last known address of Mr. Kwang Seok KANG, who is a citizen of Korea, is:

#203
881-4 Hwajeong-dong, Deokyang-gu
Goyang-si, Gyeonggi-Do
412-270
Republic of Korea

UTStarcom, Inc. respectfully submits that it has been unable to obtain Mr. KANG's cooperation. Every attempt to obtain Mr. KANG's signature has been unsuccessful. As evidenced by the accompanying declaration of Jiwon Lim, continuous and diligent efforts have been made to obtain Mr. KANG's signature on declarations for this case. Furthermore, as evidenced in the accompanying declaration and memorandum of law signed by Joo-Young Kim, the present application is considered the property of UTStarcom even in the absence of Mr. KANG's signature on a declaration or assignment. Based on such diligent efforts to obtain Mr. KANG's signature on the declaration for this case, and the accompanying declarations and memorandum of law, we believe that the requirements of 37 C.F.R. § 1.47(b) and MPEP § 409.03 have been met.

Filing of the application without Oath or Declaration executed by Kwang Seok KANG is necessary to preserve the rights of Applicant UTStarcom, Inc. Applicant UTStarcom, Inc. will suffer irreparable harm if not allowed to apply for a patent for the above-referenced

Application because the United States Patent and Trademark Office will hold the present Application abandoned if it is without an executed Oath or Declaration.

This Petition is being submitted with the fee set forth in 37 C.F.R. § 1.17(g), which is currently set at $ 200.00.

Respectfully submitted,

Date: April 26, 2007

Robert J. Irvine, III
Reg. No. 41,865
McDonnell Boehnen Hulbert & Berghoff LLP
300 South Wacker Drive, Ste. 3100
Chicago, Il 60606
Tel: 312 913 – 0001
Fax: 312 913 – 0002

PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
Attorney Docket No. 05-518-B

In re Application of:	)	
	)	
Kwang Seok KANG	)	Examiner: TBA
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For: Structure of a Management Information Base Communicated Between a Network Management System and an Agent of a Network Element	)	

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Alexandria, VA 22313-1450

STATEMENT ESTABLISHING PROPRIETARY INTEREST BY PERSON SIGNING ON BEHALF OF NONSIGNING INVENTOR AND STATEMENT UNDER 37 C.F.R. § 3.73(B)

UTStarcom, Inc. has a sole proprietary interest in the present application. The invention, entitled "Structure of a Management Information Base Communicated Between a Network Management System and an Agent of a Network Element," was originally assigned by the inventor to Hyundai Syscomm on November 30, 2002, as part of Hyundai Syscomm's employee invention compensation policy, and was filed as Korean National Application Number 2004-0002983 (Exhibit A). On April 27, 2004, UTStarcom, Inc., through its wholly owned subsidiary in Korea, UTStarcom Korea Limited, acquired Hyundai Syscomm's Intellectual Property Portfolio, including the rights to the above-referenced application,

corresponding to Korean National Application Number2004-0002983 (Exhibit B, page 46 of 46, entry number 1326).

I establish this proprietary interest by attaching a copy of the assignment of this invention by the non-signing-inventor to Hyundai Syscomm, Inc. as recorded with the U.S. Patent and Trademark Office (Exhibit A), and a copy of the assignment of this invention by Hyundai Syscomm, Inc. to UTStarcom Korea Limited as recorded with the U.S. Patent and Trademark Office (Exhibit B). Further, a declaration and memorandum of law prepared by Joo-Young Kim of Kim & Chang in Korea sufficiently demonstrates UTStarcom's ownership of the present application in the absence of an inventor's assignment. As such, UTStarcom, Inc. is presently the assignee and owner of the rights to the above-referenced application.

This STATEMENT ESTABLISHING PROPRIETARY INTEREST BY PERSON SIGNING ON BEHALF OF NONSIGNING INVENTOR is made by Robert J. Irvine, III, a person authorized to act on behalf assignee UTStarcom, Inc.

Respectfully submitted,

Date: April 26, 2007

Robert J. Irvine, III
Registration No. 41,865
McDonnell Boehnen Hulbert & Berghoff LLP
300 South Wacker Drive, Ste. 3100
Chicago, Il 60606
Tel: 312 913 0001
Fax: 312 913 0002

EXHIBIT A

Electronic Patent Assignment System

Confirmation Receipt

Your assignment has been received by the USPTO.
The coversheet of the assignment is displayed below:

PATENT ASSIGNMENT

Electronic Version v1.1
Stylesheet Version v1.1

SUBMISSION TYPE:	NEW ASSIGNMENT
NATURE OF CONVEYANCE:	ASSIGNMENT

CONVEYING PARTY DATA

Name	Execution Date
Kwang Seok Kang	11/30/2002

RECEIVING PARTY DATA

Name:	Hyundai Syscomm, Inc.
Street Address:	San 136-1, Ami-Ri, Bubal-eub, Icheon-si
City:	Gyeonggi-do
State/Country:	KOREA, REPUBLIC OF
Postal Code:	467-701

PROPERTY NUMBERS Total: 1

Property Type	Number
Application Number:	10585838

CORRESPONDENCE DATA

Fax Number: (312)913-0002
Correspondence will be sent via US Mail when the fax attempt is unsuccessful.
Phone: 3129130001
Email: docketing@mbhb.com
Correspondent Name: McDonnell Boehnen Hulbert & Berghoff LLP
Address Line 1: 300 South Wacker Drive
Address Line 2: Robert J. Irvine III
Address Line 4: Chicago, ILLINOIS 60606

ATTORNEY DOCKET NUMBER:	05-518-B
NAME OF SUBMITTER:	Robert J. Irvine III

Signature:	/Robert J. Irvine III/
Date:	04/26/2007

Total Attachments: 21
source=05-518-B-Assignment#page1.tif
source=05-518-B-Assignment#page2.tif
source=05-518-B-Assignment#page3.tif
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source=05-518-B-Assignment#page21.tif

RECEIPT INFORMATION

EPAS ID:	PAT274432
Receipt Date:	04/26/2007
Fee Amount:	$40

Return to home page

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HYUNDAI SYSCOMM

Confidential

Employee's Declaration of Invention

Date: November 30, 2002

Invention Team					On-the-job Maintenance Team		Patent Team				
Approval	Work Code		Approving Authority		Reviewer		Approval	Work Code		Approving Authority
	Primary Inventor	Reviewer	Approved by					Drafter	Reviewer	Approved by
	Signed	*signed*	*signed*					*signed*	*signed*	*signed*
Position / Name	SW/KANG, Kwang Seok	GJ/YANG, J. H.	CJ/JEONG, S.H.		/		Position / Name	SW/LEE, Chun Mi	DL/YOON, Hyoung Jin	
Date				Control No.			Date			
Years in Storage	0, 1, 2, 3, 5, 10, Permanent						Years in Storage	1, 3, 5, 10, P	Security Rating	1, 2, 3, Confidential

Under the provisions of the employee's invention compensation policy, I request to proceed with the filing/registration of my invention and to assign its rights for domestic and international registrations.

Statement by Inventor

Title of the Invention	DESIGN FOR A STRUCTURE OF A META MIB (MANAGEMENT INFORMATION BASE) FOR AN NE (NETWORK ELEMENT) AGENT TO AUTOMATICALLY BUILD MIB INFORMATION IN AN NMS (NETWORK MANAGEMENT SYSTEM)
Summary of the Invention	The present invention describes a design of a meta MIB structure, which focuses mainly on maximizing network management functions, wherein said functions are to be performed quickly and accurately by receiving information of MIB from an NE agent via on-line in NMS.
Name(s) of Related Projects	
Status of the Embodiment	☐ Conception ☐ Completed Design ☒ (In, Completed) Testing ☐ (Preparing, In) Business Implementation
Publication Status of the Invention	☐ Unpublished ☐ Expected to be Published※ ☒ Published Earlier※ ※ If checked, please specify the (scheduled) date of publication and related dissertations. [(Scheduled) Date of Publication: June 29, 2002 ; Related dissertations: Design of Automatic Import System of NE MIB for Network Management at SNMP-based NMS]
Prior Art	Korean: Foreign:
Filing Term	☒ Standard ☐ Urgent → (Within days) — Reason for Urgent Filing:
Foreign Filing	☐ Yes (Reason:) ☒No
Key Word	

Statement by Patent Team

Date of Receipt	November 30, 2002	Agent	Phoenix patent office	Hyundai Syscomm Ref.	CM2002-12-0066
Korean Filing	☑ Patent ☐ Utility Model ☐ Journal of Technical Disclosure ☐ Withhold Filing (Reason:)				
	Request for Examination: ☐Yes ☒ No		Strategic Patent Project for the Invention: 42		
Foreign Filing	☐ Yes ☐ No		Filing Rating: B		
	Deliberation: ☐ Yes ☐ No		*Remarks for Agents writing the specification*		

Designating Countries to File: ☐ Direct National Filing ☐ EPO Filing ☐ PCT Filing

1st Priority		5th Priority	
2nd Priority		6th Priority	
3rd Priority		7th Priority	
4th Priority		8th Priority	
Note			

☐ Domestic filing without Review
☑ Domestic filing after Patent Team Review
☐ Simultaneous Korean & Foreign Filing

Reviewer's Opinion: OK

Statement by Manager of Invention Team

< Evaluation of the Invention>

Category	Contents	Evaluation Grade
Technology	Simple technology	☐ 1 point
	Slightly higher technology	☐ 3 point
	Advanced technology	☒ 5 point
Possible Implementation	Theoretically possible to implement, but has no plan for testing	☐ 1 point
	Developments in related technologies are required first for testing	☐ 2 point
	Currently testing or planning to test	☐ 3 point
	Tested and obtained satisfactory results (Attach Documents)	☒ 5 point
	Preparing or currently implementing into one's business	☐ 7 point
Effects	What is the level of improvement? (Simplification of processes, yield, cost etc.)	☐ 3 ☒ 2 ☐ 1 point
Importance	Defending the rights in disclosing the technology	☐ 1 point
	Adaptable (or scheduled) for mass production	☒ 3 point
	Absolutely necessary to obtain exclusive technology	☐ 5 point
Evaluation Result		(15)Point

Note: ※ The Invention Evaluation form must be filled out by the manager of the invention team.
※ Evidence is necessary for those inventions that are rated 5 or 7 points in the section of "Possibility for Implementation."
※ The Evaluation Result should be filled in only after completing the Evaluation.

<Evaluation for Foreign Filing>

Status of products to which the invention was applied	* Applied Product:	* For cases applied to multiple products, list all product names. For future cases to be applied, mark the estimated period.
	* Related Technology:	
	* Applied Period:	

Evaluation	☐ Absolutely necessary ☐ Observe for a year after filing domestically ☐ Not necessary	Designation of Countries	
		1st Priority	
		2nd Priority	
		3rd Priority	
	☐ Direct National Filing ☐ EPO Filing ☐ PCT Filing	4th Priority	
		5th Priority	
	Technological Factor	6th Priority	
		7th Priority	
		8th Priority	
	Economical Factor	Evaluator	
		Name: Position: Signature:	

Inventor Information	**Primary Inventor**	**Name**	(Korean) 강 광 석	(S/W) Development Group (Network Development) Team						
			(Chinese) 姜 光 錫	**Position**	SW	**Employee ID No.**	H23071	**Tel** (7961)		
			(English) Kang Kwang Seok	**Residence ID**		741015-1233719				
		E-mail	ksk74@hysyscom.com	**Address**	#203, 881-4 Hwajeong-dong, Deokyang-gu, Goyang-si, Gyeonggi-do 412-270			**Signature**	*signed*	
	Joint Inventor	**Name**	(Korean)	( ) Development Group ( ) Team						
			(Chinese)	**Position**		**Employee ID No.**		**Tel** ( )		
			(English)	**Residence ID**		-				%
		E-mail		**Address**				**Signature**		
		Name	(Korean)	( ) Development Group ( ) Team						
			(Chinese)	**Position**		**Employee ID No.**		**Tel** ( )		
			(English)	**Residence ID**						%
		E-mail		**Address**				**Signature**		
		Name	(Korean)	( ) Development Group ( ) Team						
			(Chinese)	**Position**		**Employee ID No.**		**Tel** ( )		
			(English)	**Residence ID**						%
		E-mail		**Address**				**Signature**		
		Name	(Korean)	( ) Development Group ( ) Team						
			(Chinese)	**Position**		**Employee ID No.**		**Tel** ( )		
			(English)	**Residence ID**						%
		E-mail		**Address**				**Signature**		
		Name	(Korean)	( ) Development Group ( ) Team						
			(Chinese)	**Position**		**Employee ID No.**		**Tel** ( )		
			(English)	**Residence ID**						%
		E-mail		**Address**				**Signature**		

Note: 1. The full address and e-mail address are required.
2. Write the full name in English.

HYUNDAI SYSCOMM

社 外 秘

직무 발명 신고서

신고일:2002년 11월30일

발명실 결재	업무코드		승인권자	현장관리자 검토	법제특허부 결재	업무코드		승인권자
	주발명자	검토	팀장			기안	검토	승인
직위/성명	SW 양승석	GJ 양재혁	CJ 정성권	/	직위/성명	SW이호미		/
일 자	11/30	11/30	11/30	관리번호	일 자			
보존년한	0.1.2.3.5.10.영구				보존년한	1.3.5.10.영구	보안등급	1.2.3 대외비

사내 직무발명보상기준에 의거하여 출원/등록을 의뢰하며,국내/외 등록권리를 양도합니다.

발명자 기재사항

발명의 명칭	NMS의 자동 MIB 정보 구축을 위한 NE Agent의 Meta MIB 구조 설계
발명의 개요	본 발명은 NMS에서 NE Agent로부터 MIB 자체의 정보를 온라인상으로 제공받아 신속, 정확한 망 관리 기능을 발휘할 수 있도록 망 관리 기능 극대화에 초점을 둔 Meta MIB 구조 설계에 대해 기술한다.
관련PROJECT명	
실 시 상 황	□ 착상 □ 설계완료 ■ 시험(완료) □ 사업화(준비중,실시중)
본발명의 발표상황	□ 미발표 □ 발표예정 ■ 既발표 ※既발표 또는 발표 예정인 경우 발표(예정)일과 관련논문등 기입 요망 [발표일:2002년 6 월 29일. 관련논문: SNMP 기반 NMS에서 네트웍 관리를 위한 NE MIB의 자동 Import System 설계]
선행특허자료	국 내 : 외 국 :
출원완급	☑ 보 통 □ 지 급-->(____일이내) / 지급출원 이 유 :
외국출원	□ 유 (이유:) ☑ 무
KEY WORD	

법제특허부 기재사항

접 수 일	2002년11월30일	대리인	피닉스	전담자관리번호	CM2002-12-0066
국내출원	☑ 특허 □ 실용 □ 공개기보 □ 출원보류(이유:)				
	심사청구	□ 유 ☑ 무	전략특허PROJECT명	42	
외국출원	□ 유 □ 무		출원등급	B	
	심의여부	□ 유 □ 무	*대리인 특허명세서작성 참조사항*		

출원국가선정

□ 개별국출원 □ EPO출원 □ PCT출원

1순위		5순위	
2순위		6순위	
3순위		7순위	
4순위		8순위	
비고			

□ 사무소 자체 국내출원 ☑ 특허팀검토후 국내출원

□ 국내외 동시출원

검토의견: 이상

HYUNDAI SYSCOMM

발명실장 기재사항

< 발명 평가내용 >

구 분	내 용	평가점수
기 술 성	단순 조합 기술임	□ 1점
	약간 높은 수준을 요하는 기술임	□ 3점
	고도의 수준을 요하는 기술임	☑ 5점
실현가능성	이론상 실현은 가능하나, 실험계획은 없슴	□ 1점
	테스트 하려면 관련기술의 발전이 요구됨	□ 2점
	테스트중이거나 예정임	□ 3점
	양호한 테스트 결과 얻음(자료첨부 가능)	☑ 5점
	현재 사업화 준비중 또는 실시중임	□ 7점
효 과	개선된 효과의 수준은? (공정 단순화, Yield, Cost 등의 측면)	□ 3점 ☑ 2점 □ 1점
발명중요도	기술공개로 타사 권리확보를 방어하는 수준임	□ 1점
	양산에 적용(예정) 가능한 발명임	☑ 3점
	반드시 필요한 독점 기술임	□ 5점
평가결과		(15) 점

주)※상기 발명 평가표는 반드시 실장이 직접 기재하시기 바랍니다.
※"실현가능성"란에서 5점,7점에 해당된 발명은 증빙 자료가 반드시 필요 합니다.
※평가를 완료하신후 평가결과를 기입 바랍니다.

< 외국출원 평가내용 >

발명의 적용제품 현 황	*적용제품: *관련기술: *적용시기:	*복수제품에 적용되는 경우 전부 기재하시기 바라며, 향후 적용 제품경우 예상시점을 기재요망
평가내용	□ 절대 필요 □ 국내출원후 1년간 관망 □ 필요 없음 □ 개별국출원, □ EPO출원, □ PCT출원 기술적측면	출원희망국가 1순위 2순위 3순위 4순위 5순위 6순위 7순위 8순위
	경제적측면	평가자 성명: 직위: 서명:

HYUNDAI SYSCOMM

社 外 秘

발명자 인적사항								
발명자 1	성명	(한글) 강 광 석	(S/W) 개발 Group	(네트웍 개발)실				
		(한문) 姜 光 錫	직위	사원	사번	H23812	TEL (7961)	
		(영문) Kang Kwang Seok	주민등록No	741015 - 1233719				
	E-mail	ksk74@hysyscomm.com	주소	(412-270)경기도 고양시 덕양구 화정동 881-4 203호			서 명	
발명자 2	성명	(한글)	( ) 개발 Group	( )실				
		(한문)	직위		사번		TEL ( )	
		(영문)	주민등록No	-				
	E-mail		주소	(-)			서 명	
발명자 3	성명	(한글)	( ) 개발 Group	( )실				
		(한문)	직위		사번		TEL ( )	
		(영문)	주민등록No	-				
	E-mail		주소	(-)			서 명	
발명자 4	성명	(한글)	( ) 개발 Group	( )실				
		(한문)	직위		사번		TEL ( )	
		(영문)	주민등록No	-				
	E-mail		주소	(-)			서 명	
발명자 5	성명	(한글)	( ) 개발 Group	( )실				
		(한문)	직위		사번		TEL ( )	
		(영문)	주민등록No	-				
	E-mail		주소	(-)			서 명	
발명자 6	성명	(한글)	( ) 개발 Group	( )실				
		(한문)	직위		사번		TEL ( )	
		(영문)	주민등록No	-				
	E-mail		주소	(-)			서 명	

㈜1. 주소는 상세히 기재하시고, E-mail은 반드시 *회사계정*으로 기재하시기 바람.
2. 영문기재시 Fullname을 기재하시기 바람.

HYUNDAI SYSCOMM

社 外 秘

발명의 명세서

1. 발명의 명칭

발명의 실질적 내용에 대해 가장 적절히 표현할수 있는 명칭을 간결하고 명확하게 기재하되 약자는 가급적 피해주시기 바람.

NMS의 자동 MIB 정보 구축을 위한 NE Agent의 Meta MIB 구조 설계

2. 발명의 상세한 설명

1)산업상의 이용분야

발명이 무엇에 관한 것이며,어느 기술분야에 적용되는지를 기재하고,타 기술 분야에서도 활용이 가능하면 그 기술분야도 기재하시기 바람.

SNMP 망관리 구조에서 NMS와 NE Agent는 서로 MIB을 Offline으로 공유하는구조이다. 이에 반해 본 발명은 NMS에서 NE Agent로부터 MIB 자체의 정보를 온라인상으로 제공받아 신속, 정확한 망 관리 기능을 발휘할 수 있도록 망 관리 기능 극대화에 초점을 둔 Meta MIB 구조 설계에 관한 것이며, 망관리 기술 분야에 적용 가능하다.

2)종래기술의 설명 및 그 문제점

*본 발명이 속하는 기술분야에서 본 발명과 연관되는 종래기술이 어떻게 실시되는지 기술적 구성이나 개요를 비교적 상세히 설명하고,그 문제를 기재하기 바람. *본 발명과 관련된 참고문헌이나 특허공보가 있으면 문헌명이나 공보번호를 기재하고, 그 자료를 본 명세서에 첨부하시기 바람.

SNMP 망 관리 구조 모델은 전산망 관리 장비의 망 관리 시스템(NMS : Network Management System) 응용과 전산망 요소(NE : Network Element)의 수행자(Agent) 사이에서 관리 정보 교환에 의해 수행된다. MIB은 SNMP를 사용하여 NE Agent와 NMS 사이에 교환되는 관리 정보를 말한다.SMI로 정의된 MIB은 관리 객체들의 집합이라고 볼 수 있으며, 각각의 관리 객체는 그 유일한 식별자와 특성을 가진다. 각 관리 객체의 식별자는 전역적으로 유일한 값을 가지며, 관리객체의 특성은 SMI에 정의된 형식을 기준으로 구성되게 된다.

NMS와 NE Agent간의 관리 정보 항목에 대한 처리 과정을 수행하기 위해, NMS와 NE Agent는 관리 항목을 기술한 SMI규격의 MIB 정의 문서를 Offline을 통해 공유한다.(4 도면의 간단한 설명 그림1 참조) 즉, MIB은 NMS와 NE Agent 양단간에 그 의미와 형식이 사전에 공유되어야 한다. 그러나 양단간에 공유되지 않으면 NE에 대한 망관리 기능을 발휘하지 못하는 제약점이 생기게 된다. 또한 NE Agent에 새로운 MIB이 추가될경우 NMS에 추가된 MIB을 오프라인으로 알려 주어야 한다. 이것은 신속 정확한 망관리 운영에 문제가 된다.

참고문헌: [1]"SNMP, SNMPv2, and CMIP The Practical Guide to Network-Management Standards" William Stallings.
[2] RFC 1155:" Structure and Identification of Management Information for TCP/IP-based Internets" , M. Rose, K. McCloghrie, May. 1990

3)종래 문제점을 해결하기 위한 본 발명의 기술적 원리

*본 발명에서 상기와 같은 기술적 문제점을 어떻게 해결하고 있는지 그 해결책의 요지만을 기재하고, 그 상세한 설명은 다음항에 기재하기 바람.
*어떤 효과를 지닌 어떤기술을 사용하여 어떤 문제점을 해결하였다는 등

본 발명은 종래의 문제점을 극복하기 위해서 NE Agent가 가지고 있는 MIB 자체에 대하여 그 정보를 NMS로 전송하여야 한다. NMS가 NE Agent로 관리 정보를 요청하기 위해 필수적으로 필요한 정보들을 MIB의 형태로 Meta MIB 설계를 함으로써 NMS는 SNMP로 NE Agent의 Meta MIB 정보에 대한 요청으로 사전에 MIB이 공유되지 않더라도, NE Agent가 가지고 있는 MIB을 자동적으로 구성 할수 있게 된다..(4 도면의 간단한 설명 그림2 참조)

4)본 발명의 구성 및 그 전반적인 동작설명

*본 발명은 본 발명이 속하는 기술분야 또는 연관된 기술분야에 종사하는 기술자라면 누구라도 실시할수 있을 정도로 상세하고도 정확한 표현으로 기재하시기 바람.

1. NE Agent의 MIB 정보를 Meta MIB으로의 설계

1.1 SMI로 표현되는 MIB의 정형화 구조

MIB 정보를 표현하기 위한 Meta MIB으로 구조화 시키기 위해서는 NE Agent MIB을 정의하기 위한 기본 구조인 SMI를 Meta MIB으로 표현할 수 있도록 그 구조를 정형화 시켜야 한다. 이러한 정형화 과정을 위해 SMI의 구조 자체를 일반적인 MIB의 형태로 표현하고 SMI를 정형화한 MIB의 인스턴스로 NE Agent MIB의 정보들을 표현함으로써 Meta MIB을 구성한다. 이를 위해 NE Agent MIB 객체들의 공통 특성들을 표현하기 위한 baseInfoTable을 하나의 테이블로하여 NE Agent MIB 객체들의 공통 특성을 반영하는 Meta MIB 테이블를 구성한다. 그리고 objectInfoTable과 trapInfoTable을 각각 생성함으로써 OBJECT-TYPE과 TRAP-TYPE Object들을 표현하는 특성들을 반영시킨다. 그리고 Table의 연관관계와 인덱스를 표현하기 위해 sequenceInfoTable을 생성하고, INTEGER syntax의 의미를 반영하기 위한 syntaxIntegerTable을 생성한다.

1.2 MIB 정보의 Meta MIB으로의 Mapping

SMI구조로 정의된 MIB 정보를 표현하기 위한 Meta MIB의 객체중 MIB 객체가 표현하는 공통 부분에 해당하는 baseInfoTable에 대한 객체를 살펴보면 다음과 같이 매핑 되어 설계된다.

baseInfoTable의 baseInfoIndex는 테이블의 인스턴스를 구분하는 인덱스로 사용된다. baseInfoTable의 moduleName은 NE Agent MIB의 DEFINITOINS과 매핑된다. moduleName으로 NE Agent에서 사용되는 MIB의 종류를 알 수 있다. baseInfoTable의 objectName은 NE Agent MIB에 나타나는 모든 관리 객체들의 이름과 매핑된다. baseInfoTable의 objectType은 NE Agent MIB의 관리 객체들의 타입을 표현하는 것으로 여기에 해당하는 것은 OBJECT IDENTIFIER, OBJECT-TYPE, TRAP-TYPE, NOTIFICATION-TYPE 등이 있다. baseInfoTable의 objectType은 Abstract Syntax로 INTEGER를 사용하여 object-identifier(1), object-type(2), trap-type(3), notification-type(4)으로 매핑한다. baseInfoTable의 objectID는 NE Agent MIB의 관리 객체 OID와 매핑되며, Abstract Syntax로 OBJECT IDENTIFIER를 사용한다. 마지막으로 baseInfoTable의 description은 MIB 관리 객체의 DESCRIPTION 부분과 매핑된다.

4) 항에서 계속

1.3 OBJECT-TYPE 객체의 Meta MIB Mapping

NE Agent MIB에서 관리 객체가 OBJECT-TYPE으로 선언되는 객체에 대하여 Meta MIB으로 매핑하는 방법을 기술하면 다음과 같다.

Meta MIB안에서 objectInfoTable은 OBJECT-TYPE으로 표현되는 객체에 대한 특성을 반영할 수 있도록 설계되었다. ObjectInfoTable의 objectInfoEntry는 인덱스로 objectInfoIndex와 baseInfoIndex를 사용한다. objectInfoIndex는 테이블의 인스턴스를 구분하는 인덱스이고 baseInfoIndex는 baseInfoTable에서 objectType객체의 값이 object-type인 경우에 해당하는 인덱스의 값을 나타낸다. objectInfoTable의 objectBaseSyntax는 NE Agent MIB의 SYNTAX를 표현한 것으로 ASN.1의 Primitive Type인 INTEGER, OCTET STRING, OBJECT IDENTIFIER와 Constructor Type인 SEQUENCE, SEQUENCE OF가 해당되며, Abstract Syntax로 INTEGER를 사용하여 integer(1), octet_string(2), object_identifier(3), sequence_of(4), sequence(5)으로 매핑한다. objectInfoTable의 objectComposedSyntax는 NE Agent MIB의 SYNTAX가 재정의 된 경우를 매핑한다. 예를 들면 RFC1213의 특정 객체의 SYNTAX가 DisplayString 경우 OCTET STRING이 재정의 된 것이다. 이와 같이 재정의된 SYNTAX에 대해 매핑하며 재정의 되지 않은 SYNTAX는 objectBaseSyntax와 동일 하게 매핑한다. objectComposedSyntax는 Abstract Syntax로 DisplayString을 사용한다. objectInfoTable의 objectStatus는 NE Agent MIB 객체의 STATUS 종류를 나타내는 것으로 Abstract Syntax로 INTEGER를 사용하여 mandatory(1), optional(2), o NE Agent MIB 객체의 ACCESS 종류를 나타내는 것으로 Abstract Syntax로 INTEGER를 사용하여 read-only(1), read-write(2), write-only(3), not-accessible(4)로 매핑한다.

Meta MIB의 syntaxIntegerTable은 NE Agent MIB의 SYNTAX가 INTEGER일때 subtype을 매핑하기 위해 설계되었다. 설계된 객체를 살펴보면 다음과 같다. syntaxIntegerEntry는 인덱스로 syntaxIntegerInfoIndex와 baseInfoIndex를 사용한다. syntaxIntegerInfoIndex는 테이블의 인스턴스를 구분하는 인덱스이고, baseInfoIndex는 baseInfoTable에서 objectType객체의 값이 object-type이면서 objectInfoTable에서 objectBaseSyntax의 값이 integer인 객체의 인덱스 값을 표현한다. syntaxIntegerValue는 NE Agent MIB의 SYNTAX INTEGER의 subtype과 매핑된다. syntaxIntegerValueString은 NE Agent MIB의 SYNTAX INTEGER의 subtype의 표현 문자열과 일대일 매핑된다.

Meta MIB의 sequenceInfoTable은 NE Agent MIB의 SYNTAX가 SEQUENCE OF인 테이블의 경우를 매핑하기 위해 설계되었다. 인덱스로 sequenceIndex와 baseInfoIndex를 사용한다. sequenceIndex는 인스턴스를 구분하는 인덱스이다. baseInfoIndex는 objectInfoTable에서 objectBaseSyntax의 값이 sequence-of인 baseInfoIndex의 값을 나타낸다. sequenceIndexValue는 NE Agent MIB의 테이블 인덱스와 매핑되는 것으로 값은 baseInfoIndex중 NE Agent MIB의 테이블 인덱스를 나타내는 값과 일치한다. sequenceEntryInfo는 NE Agent MIB의 엔트리 인스턴스와 매핑되는 것으로 값은 baseInfoIndex중 NE Agent MIB의 엔트리 인스턴스를 나타내는 값과 일치한다.

1.4 TRAP-TYPE 객체의 Meta MIB Mapping

NE Agent MIB의 Trap 객체에 대한 Meta MIB으로의 매핑 설계 방법을 기술하면 다음과 같다.

Trap 객체 처리를 위해 trapInfoTable을 설계하였다. trapInfoTable에 기술된 인덱스는 trapInfoIndex와 baseInfoIndex이다. trapInfoIndex는 인스턴스를 구분하는 인덱스이고, baseInfoIndex는 baseInfoTable의 객체인 objectType의 값이 trap-type 이거나 notification-type인 경우의 인덱스 값을 나타낸다. trapInfoTable의 trapEnterprise 객체는 NE Agent MIB의 TRAP-TYPE 객체의 ENTERPRISE 값과 매핑되며, TRAP-TYPE이 아니라 NOTIFICATION-TYPE일 경우는 NULL 값으로 매핑한다. trapInfoTable의 trapVariable 객체는 NE Agent MIB에서 TRAP-TYPE 객체의 VARIABLES 값과 매핑되며, NOTIFICATION-TYPE일 경우는 OBJECTS의 값을 매핑 한다.

1.5 Meta MIB의 정의

다음과 같이 Meta MIB을 정의하였다.

4) 항에서 계속

```
MibInfo-MIB DEFINITIONS ::= BEGIN

IMPORTS
        mgmt, NetworkAddress, IpAddress, Counter, Gauge, Integer32,
                TimeTicks, enterprises
           FROM RFC1155-SMI
        OBJECT-TYPE
                FROM RFC-1212
  DisplayString FROM RFC1213-MIB;

--
--
--

mibInfo      OBJECT IDENTIFIER ::= { enterprises 7961 }

baseInfo     OBJECT IDENTIFIER ::= { mibInfo 1 }

syntaxInfo   OBJECT IDENTIFIER ::= { mibInfo 2 }


 baseInfoTable OBJECT-TYPE
SYNTAX  SEQUENCE OF BaseInfoEntry
ACCESS not-accessible
STATUS mandatory
DESCRIPTION
  " This Table is for MIB Object base information."
::= { baseInfo 1 }

 baseInfoEntry OBJECT-TYPE
SYNTAX BaseInfoEntry
ACCESS not-accessible
STATUS mandatory
DESCRIPTION
  ""
INDEX { baseInfoIndex }
::= { baseInfoTable 1 }

 BaseInfoEntry ::=
SEQUENCE {
 baseInfoIndex
  INTEGER,
 moduleName
  DisplayString,
 objectName
  DisplayString,
 objectType
  INTEGER,
 objectID
  OBJECT IDENTIFIER,
```

4) 항에서 계속

```
 description
  DisplayString
}

 baseInfoIndex OBJECT-TYPE
SYNTAX INTEGER (0..2147483647)
ACCESS read-only
STATUS mandatory
DESCRIPTION
  " baseInfoIndex distinguish each object"
::= { baseInfoEntry 1 }

 moduleName OBJECT-TYPE
SYNTAX  DisplayString
ACCESS read-only
STATUS mandatory
DESCRIPTION
  " Module Name of MIB File"
::= { baseInfoEntry 2 }

 objectName OBJECT-TYPE
SYNTAX DisplayString
ACCESS read-only
STATUS mandatory
DESCRIPTION
  " Object Name"
::= { baseInfoEntry 3 }

 objectType OBJECT-TYPE
SYNTAX INTEGER {
 object-type(1),
 object-identifier(2),
 trap-type(3),
 notification-type(4)
 }
ACCESS read-only
STATUS mandatory
DESCRIPTION
  "Object type of each object"
::= { baseInfoEntry 4 }

 objectID OBJECT-TYPE
SYNTAX OBJECT IDENTIFIER
ACCESS read-only
STATUS mandatory
DESCRIPTION
  "Object identifier of MIB object"
::= { baseInfoEntry 5 }
```

4) 항에서 계속

```
description OBJECT-TYPE
SYNTAX DisplayString
ACCESS read-only
STATUS mandatory
DESCRIPTION
  "Description of MIB object"
::= { baseInfoEntry 6 }

 objectInfoTable OBJECT-TYPE
SYNTAX SEQUENCE OF ObjectInfoEntry
ACCESS read-only
STATUS mandatory
DESCRIPTION
  ""
::= { baseInfo 2 }

 objectInfoEntry OBJECT-TYPE
SYNTAX ObjectInfoEntry
ACCESS not-accessible
STATUS mandatory
DESCRIPTION
  ""
INDEX { baseInfoIndex }
::= { objectInfoTable 1 }

 ObjectInfoEntry ::=
SEQUENCE {
 objectInfoIndex
  INTEGER,
 objectBaseInfoIndexValue
  INTEGER,
 objectBaseSyntax
  INTEGER,
 objectComposedSyntax
  DisplayString,
 objectStatus
  INTEGER,
 objectAccess
  INTEGER
}

 objectInfoIndex OBJECT-TYPE
SYNTAX INTEGER (0..2147483647)
ACCESS read-only
STATUS mandatory
DESCRIPTION
  ""
::= { objectInfoEntry 1 }
```

4) 항에서 계속

```
objectBaseInfoIndexValue OBJECT-TYPE
SYNTAX INTEGER (0..2147483647)
ACCESS read-only
STATUS mandatory
DESCRIPTION
  ""
::= { objectInfoEntry 2 }

 objectBaseSyntax OBJECT-TYPE
SYNTAX INTEGER (0..2147483647)
ACCESS  read-only
STATUS mandatory
DESCRIPTION
  ""
::= { objectInfoEntry 3 }

 objectComposedSyntax OBJECT-TYPE
SYNTAX DisplayString
ACCESS read-only
STATUS mandatoryB4
DESCRIPTION
  ""
::=  { objectInfoEntry 4 }

 objectStatus OBJECT-TYPE
SYNTAX INTEGER {
  current(1),
  deprecated(2),
  obsolete(3),
  mandatory(4),
  optional(5)
  }

ACCESS read-only
STATUS mandatory
DESCRIPTION
  ""
::= { objectInfoEntry 5 }

 objectAccess OBJECT-TYPE
SYNTAX INTEGER {
  not-accessible(1),
  accessible-for-notify(2),
  read-only(3),
  read-write(4),
  read-create(5)
  }
ACCESS read-only
STATUS mandatory
DESCRIPTION
  ""
```

4) 항에서 계속

```
::= { objectInfoEntry 6 }

 trapInfoTable OBJECT-TYPE
SYNTAX SEQUENCE OF TrapInfoEntry
ACCESS not-accessible
STATUS mandatory
DESCRIPTION
  ""
::= { baseInfo 3 }

 trapInfoEntry OBJECT-TYPE
SYNTAX TrapInfoEntry
ACCESS not-accessible
STATUS mandatory
DESCRIPTION
  ""
::= { trapInfoTable 1 }

 TrapInfoEntry ::=
SEQUENCE {
 trapInfoIndex
  INTEGER,
 trapBaseInfoIndexValue
  INTEGER,
 trapEnterprise
  OBJECT IDENTIFIER,
 trapVariable
  DisplayString
}

 trapInfoIndex OBJECT-TYPE
SYNTAX INTEGER (0..2147483647)
ACCESS read-only
STATUS mandatory
DESCRIPTION
  ""
::= { trapInfoEntry 1 }

 trapBaseInfoIndexValue OBJECT-TYPE
SYNTAX INTEGER (0..2147483647)
ACCESS read-only
STATUS mandatory
DESCRIPTION
  ""
::= { trapInfoEntry 2 }

 trapEnterprise OBJECT-TYPE
SYNTAX OBJECT IDENTIFIER
ACCESS read-only
STATUS mandatory
```

4) 항에서 계속

```
DESCRIPTION
  ""
::= { trapInfoEntry 3 }

 trapVariable OBJECT-TYPE
SYNTAX DisplayString
ACCESS read-only
STATUS mandatory
DESCRIPTION
  ""
::= { trapInfoEntry 4 }


 syntaxIntegerTable OBJECT-TYPE
SYNTAX SEQUENCE OF SyntaxIntegerEntry
ACCESS not-accessible
STATUS mandatory
DESCRIPTION
  ""
::= { syntaxInfo 1 }

 syntaxIntegerEntry OBJECT-TYPE
SYNTAX SyntaxIntegerEntry
ACCESS not-accessible
STATUS mandatory
DESCRIPTION
  ""
INDEX { baseInfoIndex }
::= { syntaxIntegerTable 1 }

 SyntaxIntegerEntry ::=
SEQUENCE {
 syntaxIntegerInfoIndex
  INTEGER,
 syntaxBaseInfoIndexValue
  INTEGER,
 syntaxIntegerValue
  INTEGER
}

 syntaxIntegerInfoIndex OBJECT-TYPE
SYNTAX INTEGER (0..2147483647)
ACCESS read-only
STATUS mandatory
DESCRIPTION
  ""
::= { syntaxIntegerEntry 1 }

 syntaxBaseInfoIndexValue OBJECT-TYPE
SYNTAX INTEGER (0..2147483647)
```

4) 항에서 계속

```
ACCESS read-only
STATUS mandatory
DESCRIPTION
  ""
::= { syntaxIntegerEntry 2 }

 syntaxIntegerValue OBJECT-TYPE
SYNTAX INTEGER (0..2147483647)
ACCESS read-only
STATUS mandatory
DESCRIPTION
  ""
::= { syntaxIntegerEntry 3 }

   sequenceInfoTable OBJECT-TYPE
SYNTAX SEQUENCE OF SequenceInfoEntry
ACCESS not-accessible
STATUS mandatory
DESCRIPTION
  ""
::= { syntaxInfo 2 }

 sequenceInfoEntry OBJECT-TYPE
SYNTAX SequenceInfoEntry
ACCESS not-accessible
STATUS mandatory
DESCRIPTION
  ""
INDEX { BaseInfoIndex }
::= { sequenceInfoTable 1 }

 SequenceInfoEntry ::=
SEQUENCE {
 sequenceIndex
  INTEGER,
 sequenceBaseInfoTableIndexValue
  INTEGER,
 sequenceIndexValue
  INTEGER
}

 sequenceIndex OBJECT-TYPE
SYNTAX INTEGER (0..2147483647)
ACCESS read-only
STATUS mandatory
DESCRIPTION
  ""
::= { sequenceInfoEntry 1 }

 sequenceBaseInfoTableIndexValue OBJECT-TYPE
```

4) 항에서 계속

```
    SYNTAX INTEGER (0..2147483647)
    ACCESS read-only
    STATUS mandatory
    DESCRIPTION
      ""
    ::= { sequenceInfoEntry 2 }

     sequenceIndexValue OBJECT-TYPE
    SYNTAX INTEGER (0..2147483647)
    ACCESS read-only
    STATUS mandatory
    DESCRIPTION
      ""
    ::= { sequenceInfoEntry 3 }


END
```

5)본 발명의 다른 실시예

4)항에 기재된 본 발명의 주요 실시예 이외에 다른 실시예가 있으면 도면을 도시하고, 그 내용을 실시할 수 있을 정도로 구체화 하여 기재.

6)본 발명의 효과

본 발명과 종래기술과의 구성 및 동작의 차이에서 오는 효과를 구체적으로 기재하고,부수적으로 발생되는 이점도 기재하나,단 기술적인 근거가 없는 막연한 경제적 효과 등은 기재 불필요.

본 발명은 SNMP에서 NMS와 NE Agent사이에 교환하는 관리정보인 MIB을 정의하는 기본 구조로써의 SMI를 MIB의 형태로 Meta MIB을 설계하여 종래 기술의 구성에서 오는 NMS와 NE Agent간의 MIB Offline 공유에 대해 NE Agent에 Meta MIB을 구성하여 Online으로 NMS는 자동적으로 NE Agent의 MIB을 공유하게 됨으로 인하여 망이 점점 고도화되고 복잡해짐으로 인한 망 운용의 자동화 기능에 효과가 있다.

3. 발명의 권리보호 범위

본 항은 발명의 명세서에 기재된 내용중 권리로서 보호 받고자 하는 사항을 기재하되, 본 발명에 의해 새롭게 창작된 구성 혹은 기능만을 기재함. 특히, 그중 보호를 받아야할 부분이나, 또 다른 실시예가 있는 경우 이를 다른 항으로 명확하고, 간결하게 기재하시기 바람.

1) MIB 객체들의 공통 특성과 매핑하는 baseInfoTable 구조 및 그 구성 객체
   - baseInfoTable의 baseInfoIndex, moduleName, objectName, objectType, objectID, description
2) MIB의 OBJECT-TYPE과 TRAP-TYPE Object들을 매핑하는 objectInfoTable과 trapInfoTable 구조 및 그 구성 객체
   - objectInfoTable의 objectInfoIndex, objectInfoBaseSyntax, objectComposedSyntax, objectStatus, objectAccess
   - trapInfoTable의 trapInfoIndex, trapEnterprise, trapVariable
3) MIB의 SYNTAX가 SEQUENCE OF인 테이블을 매핑하는 sequenceInfoTable 구조 및 그 구성 객체
   - sequenceInfoTable의 sequenceIndex, syntaxIndexValue, sequenceEntryInfo
4) MIB의 SYNTAX가 INTEGER일때 subtype을 매핑하기 위한 syntaxIntegerTable 구조 및 그 구성 객체
   - syntaxInfoTable의 syntaxIntegerInfoIndex, syntaxIntegerValue, syntaxIntegerValueString

4. 도면의 간단한 설명

※도면의 도시된 내용에 따라 발명자가 의도했던 내용이 변할수 있으므로 본 발명서에 필요한 도면을 정확하게 표시하여,명세서 뒤에 반드시 첨부하시기 바람.
※ ①전자전기회로 관련 출원은 회로도,블록도,FLOW CHART,특성그래프 등이 첨부되어야함.
②기계관련 출원은 전체 구조도,상세 구조도,투시도 등이 첨부되어야 하며,
③공정관련 출원은 전체공정 계통도와 상세공정도 및 특성그래프 등이 첨부되어야 함.
※본 항에 예를들에 "제1도는 XXX 회로도,제2도는 ...소자의 단면도… ,"와 같이 기재바람.
※도면의 필요한 부분에 대해서는 그 명칭을 본 항 하단부 아래에 기재하시기 바람.
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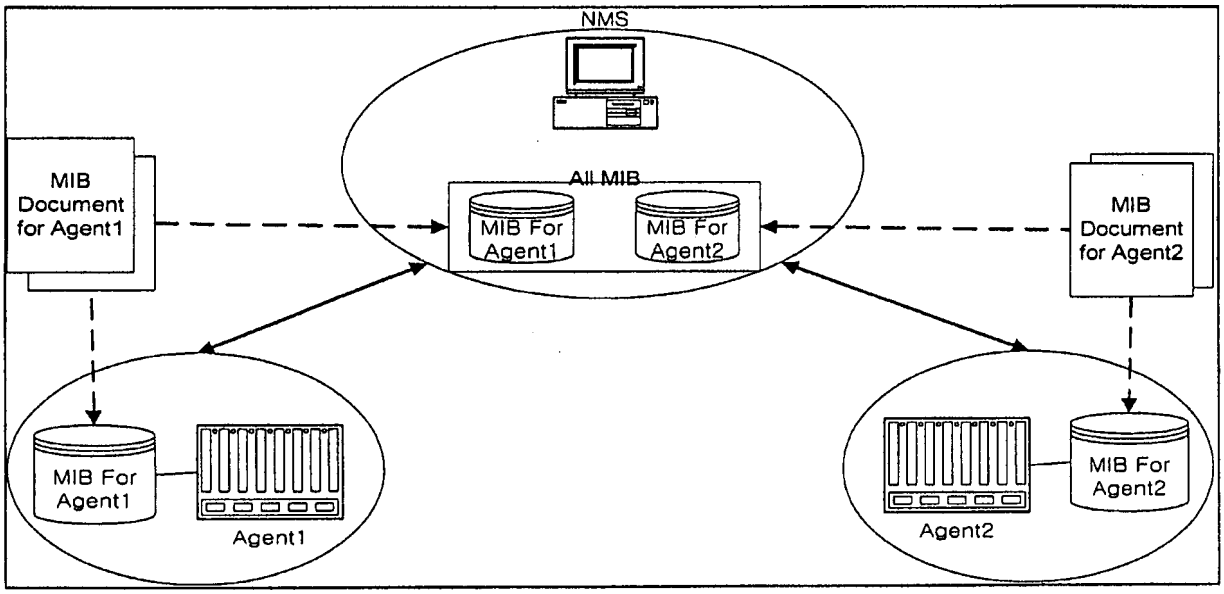

그림 1. 일반적인 MIB 공유 구조

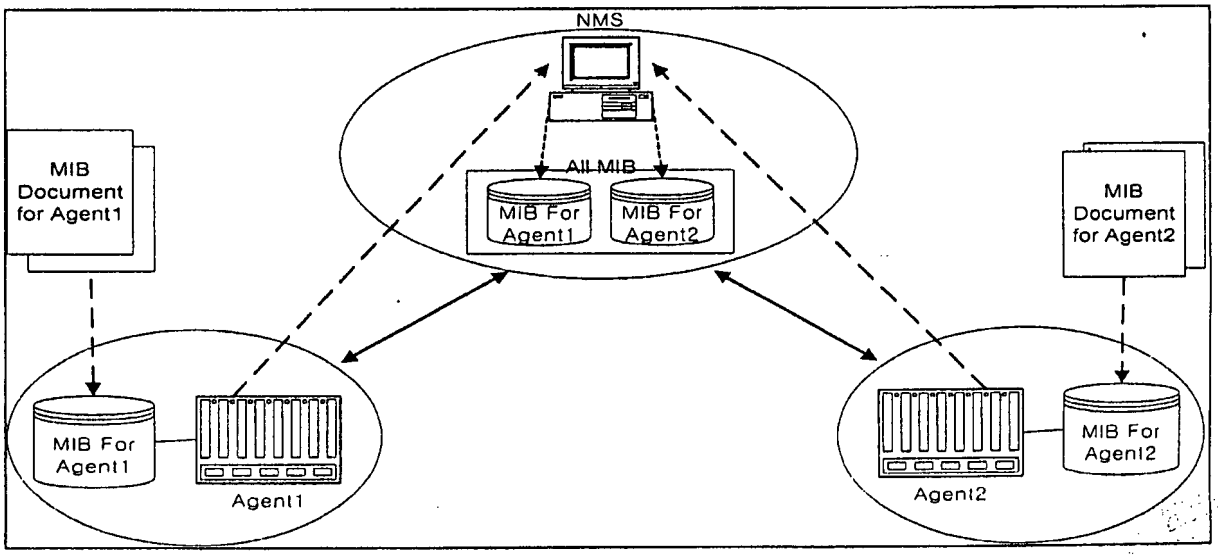

그림 2. Meta MIB을 사용한 MIB 공유구조

4. 도면의 간단한 설명

그림 3은 Meta MIB을 트리구조로 나타낸 그림이다.

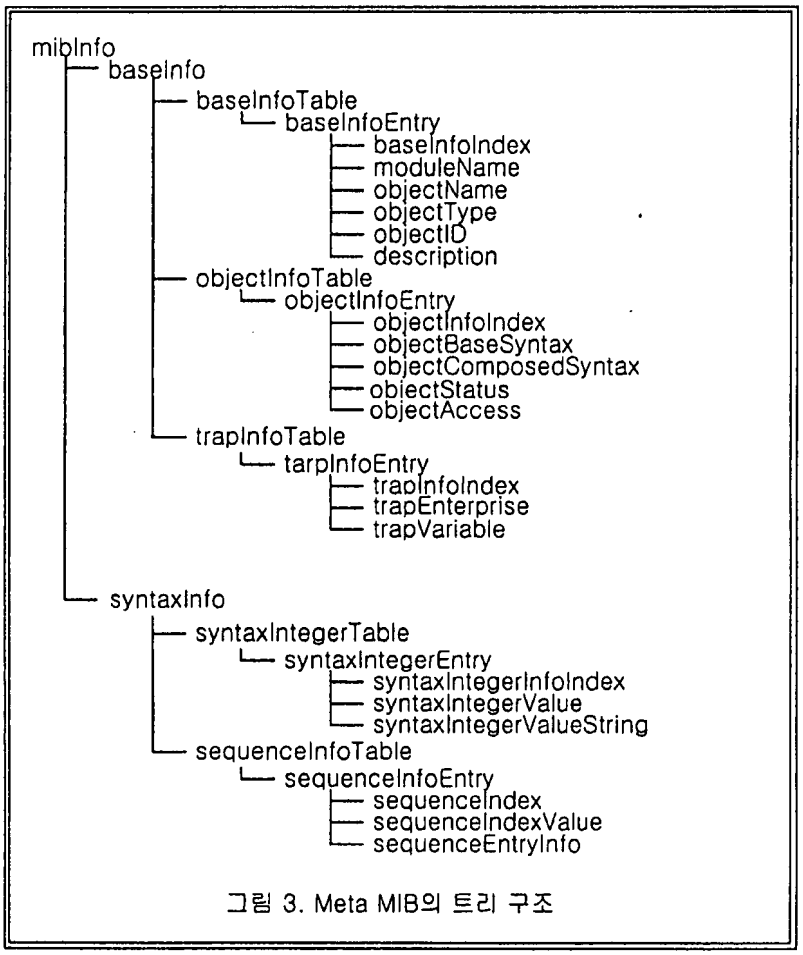

그림 3. Meta MIB의 트리 구조

EXHIBIT B

UNITED STATES PATENT AND TRADEMARK OFFICE

UNDER SECRETARY OF COMMERCE FOR INTELLECTUAL PROPERTY AND
DIRECTOR OF THE UNITED STATES PATENT AND TRADEMARK OFFICE

APRIL 19, 2007

PTAS

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MCDONNELL BOEHNEN HULBERT & BERGHOFF LLP
300 SOUTH WACKER DRIVE
ROBERT J. IRVINE III
CHICAGO, IL 60606

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RECORDATION DATE: 04/19/2007

REEL/FRAME: 019182/0266
NUMBER OF PAGES: 51

BRIEF: ASSIGNMENT OF ASSIGNOR'S INTEREST (SEE DOCUMENT FOR DETAILS).
DOCKET NUMBER: 05-497-C; 05-518-B

ASSIGNOR:
HYUNDAI SYSCOMM, INC.

DOC DATE: 04/27/2004

ASSIGNEE:
UTSTARCOM KOREA LIMITED
SAN 136-1, AMI-RI, BUBAL-EUB,
ICHEON-SI
GYEONGGI-DO, REPUBLIC OF KOREA

467-701

SERIAL NUMBER: 10569046
PATENT NUMBER:

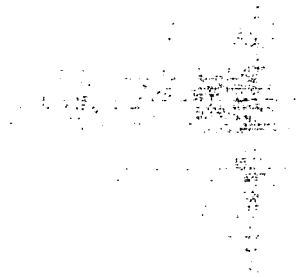
FILING DATE:
ISSUE DATE:

TITLE: METHOD OF CONTROLLING POWER IN A W-CDMA MOBILE COMMUNICATION SYSTEM

019182/0266 PAGE 2

SERIAL NUMBER: 10585838 FILING DATE:
PATENT NUMBER: ISSUE DATE:
TITLE: STRUCTURE OF A MANAGEMENT INFORMATION BASE COMMUNICATED BETWEEN A NETWORK MANAGEMENT SYSTEM AND AN AGENT OF A NETWORK ELEMENT

ASSIGNMENT SERVICES BRANCH
PUBLIC RECORDS DIVISION



PATENT ASSIGNMENT

Electronic Version v1.1
Stylesheet Version v1.1

04/19/2007
500261337

SUBMISSION TYPE:	NEW ASSIGNMENT
NATURE OF CONVEYANCE:	ASSIGNMENT

CONVEYING PARTY DATA

Name	Execution Date
Hyundai Syscomm, Inc.	04/27/2004

RECEIVING PARTY DATA

Name:	UTStarcom Korea Limited
Street Address:	San 136-1, Ami-Ri, Bubal-eub, Icheon-si
City:	Gyeonggi-do
State/Country:	KOREA, REPUBLIC OF
Postal Code:	467-701

PROPERTY NUMBERS Total: 2

Property Type	Number
Application Number:	10569046
Application Number:	10585838

CH $80.00 10569046

CORRESPONDENCE DATA

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Correspondence will be sent via US Mail when the fax attempt is unsuccessful.
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Email: docketing@mbhb.com
Correspondent Name: McDonnell Boehnen Hulbert & Berghoff LLP
Address Line 1: 300 South Wacker Drive
Address Line 2: Robert J. Irvine III
Address Line 4: Chicago, ILLINOIS 60606

ATTORNEY DOCKET NUMBER:	05-497-C; 05-518-B
NAME OF SUBMITTER:	Robert J. Irvine III

Total Attachments: 49
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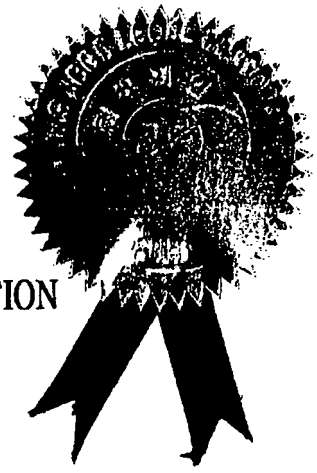
〔제41호서식〕

공증인가 법무법인 대종종합법률사무소

서울·종로구 당주동 160
(변호사회관 303호)
〔공증부 736-6604〕

Registered No. 2004 - 6060

NOTARIAL CERTIFICATE



DAE JONG LEGAL CORPORATION

160, Dang Joo-Dong, Jong Ro-Ku,
Seoul, Korea

23230-05711일
90.11.26 승인

210㎜×297㎜(특급) 70g/㎡

KIM & CHANG

Hannuri Building, 219 Naeja-dong, Jongno-gu, Seoul 110-053, Korea
Telephone: (822) 764-8855 / 2122-3900 Fax: (822) 741-0328 / 745-5954 / 763-7434
E-Mail: all@ip.kimchang.com

DECLARATION

I, the undersigned, hereby declare:

(1) That my name, mailing address and citizenship are as stated below;

(2) That I am knowledgeable in both English and Korean, which are the languages used in relation to the Assignment filed with the Korean Intellectual Property Office; and

(3) That I have translated said Assignment filed with the Korean Intellectual Property Office into English, a copy of which is attached hereto, and believe that said translation is a true and complete translation of the aforementioned Korean Assignment.

22nd day of November, 2004

Full name of the translator : LIM, Ji Won

Signature of the translator : Jiwon Lim

Mailing address : c/o Kim & Chang, Hannuri Building, 219 Naeja-dong, Jongno-gu, Seoul 110-053, Korea, Republic of Korea

Citizenship : Republic of Korea

KIM & CHANG
[Translation]

ASSIGNMENT

By this instrument, HYUNDAI SYSCOMM, INC., a corporation duly organized and existing under the Laws of Republic of Korea at San 136-1, Ami-ri, Bubal-eub, Icheon-si, Gyeonggi-do 467-701, Republic of Korea do hereby declare that on April 27, 2004 it has assigned and transferred all rights, title and interest in the cases as listed in the attached Schedule I to UTStarcom Korea Limited, a corporation duly organized and existing under the laws of Republic of Korea at San 136-1, Ami-ri, Bubal-eub, Icheon-si, Kyongki-do 467-701, Republic of Korea

IN WITNESS WHEREOF,

I have set my hand hereto this 27th day of April, 2004.

Assignor: HYUNDAI SYSCOMM INC.

By: (SEALED)

Typed Name: SEONG-IK JANG

Position: CEO & President

Schedule 1

No.	Korean Patent Application No.
1	1996009524
2	1996025985
3	1997007238
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Confidential

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Confidential

PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
Attorney Docket No. 05-518-B

In re Application of:		
Kwang Seok KANG		Examiner: TBA
International Application No.:	PCT/KR05/000141	Group Art Unit: TBA
U.S. Application No.:	10/585,838	Confirmation No.: 7868
International Filing Date:	January 14, 2005	
U.S. Filing Date:	July 12, 2006	
For:	Structure of a Management Information Base Communicated Between a Network Management System and an Agent of a Network Element	

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P.O. Box 1450
Alexandria, VA 22313-1450

DECLARATION IN SUPPORT OF PETITION UNDER 37 C.F.R. § 1.47(b) BY PERSON HAVING PROPRIETARY INTEREST TO FILE APPLICATION ON BEHALF OF INVENTOR WHO WE HAVE BEEN UNABLE TO LOCATE

Dear Sir:

This Declaration is in support of Petition under 37 C.F.R. § 1.47(b) to allow UTStarcom, Inc. to make the application on behalf of inventor Kwang Seok Kang, who we have been unable to locate.

1. I, **Jiwon LIM**, am a paralegal at the law firm Kim & Chang.

2. I have first-hand knowledge of the facts recited herein.

3. This Declaration is in support of U.S. Patent Application entitled "STRUCTURE OF A MANAGEMENT INFORMATION BASE COMMUNICATED BETWEEN A NETWORK MANAGEMENT SYSTEM AND AN AGENT OF A NETWORK

ELEMENT," filed in the U.S. Patent Office on July 12, 2006 and bearing U.S. Application No. 10/585,838 and International Application No. PCT/KR2005/000141.

4. I am a paralegal at the law firm Kim & Chang, located at Hungkuk Life Insurance Building, 9F, 226 Sinmunno 1-ga, Jongno-gu, Seoul 110-786, Korea.

5. Kim & Chang represents UTStarcom Korea Limited, a subsidiary of UTStarcom, Inc.

6. I am a citizen of Korea, residing at 840-7 Mia-dong, Gangbuk-gu, Seoul 142-820, Republic of Korea.

7. On December 1, 2006 I sent a letter, via content-certified mail, including assignment documents and the Inventor's Declaration of Invention, to Mr. Kwang Seok KANG's last known physical address (#203, 881-4 Hwanjoeng-dong, Deokyang-gu, Goyang-si, Gyeonggi-do 412-270, Republic of Korea). (See attached Exhibit 1).

8. On December 7, 2006, the content-certified package mailed to Mr. KANG was returned because the recipient was not present at the indicated address. (See attached Exhibit 2).

9. On March 2, 2007, I sent a package, including all U.S. application materials (specification, claims, and drawings) via registered mail to Mr. KANG's last known address. (See attached Exhibit 3).

10. The package was again returned on March 9, 2007 because the recipient was not present. The package was returned, rather than forwarded to Mr. KANG's current address, because the Korean postal service does not have a well-developed forwarding service. (See attached Exhibit 4).

11. I visited the inventor's last known address on March 11, 2007 at 5:10 pm. No one was present at said address. I met a woman residing next door, at apartment #201, and inquired about Mr. KANG's whereabouts. The woman residing next door indicated that she had never seen a person matching Mr. KANG's description at the

indicated address, and furthermore indicated that she believed the person occupying apartment #203 was a middle-aged woman who lives alone. (See attached Exhibit 5).

12. I also attempted to locate Mr. KANG using various web-mail searches. I was unable to find an email address for Mr. KANG using his residence identification number in all well-known Korean webmail services. (See attached Exhibit 6).

13. On December 7, 2006, I attempted to identify a current phone number for Mr. KANG by searching the Korea Info Service Corporation. The Korea Information Service Corporation (KOIS) is essentially the Korean version of "411" and other directory assistance services. An English version of the website can be found at www.ekois.co/kr/new/eng/main/index.php. (See also attached Exhibit 7). This large database is searchable for the contact information of listed people and companies. KOIS is the largest and most comprehensive directory service in Korea. KOIS verbally confirmed that no number was registered under Mr. KANG's name. All efforts to obtain a current phone number using KOIS have failed to provide new information concerning the whereabouts of Mr. KANG.

14. I hereby declare that all statements made herein are of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made under penalty of perjury and that such willful false statements may jeopardize the validity of the specification or any patent issued thereon.

Respectfully submitted,

Date: Apr. 20, 2007

By: Jiwon Lim

Jiwon LIM
Kim & Chang
Hungkuk Life Insurance Building, 9F,
226 Sinmunno 1-ga, Jongno-gu,
Seoul 110-786, Korea

EXHIBIT 1

[Translation]

金·張 法律事務所
KIM & CHANG

Hungkuk Life Insurance Building, 9F, 226 Sinmunno 1-ga, Jongno-gu, Seoul 110-786, Korea
Telephone: (822) 764-8855 / 2122-3900 Fax: (822) 741-0328 / 745-5954 / 763-7434
E-Mail: all@ip.kimchang.com

December 1, 2006

To. KANG, Kwang Seok
#203, 881-4 Hwajeong-dong, Deokyang-gu, Goyang-si, Gyeonggi-do 412-270, Republic of Korea

Re. Declaration and Power of Attorney and Assignment to be filed with U.S. Patent and Trademark Office (U.S. Serial No. 10/585,838)
K&C Ref.: GP048360/FE251553

I hope your business is prospering.

I am a patent attorney for a law firm, Kim & Chang, and contacting you on behalf of my client UTStarcom Korea Limited.

You had assigned your invention as identified on the next page to your former company in 2002, which was conceived when you were working for Hyundai Electronics Industries, Co., Ltd./ Hyundai Syscomm, Inc. under the provisions of the employee's invention compensation policy of the company. Therefore, the right to receive patent for the invention was transferred to the former company. Recently, the right to receive patent was transferred to our client, UTStarcom Korea Limited, hereinafter referred to as "UTSK" from your former company. With respect to this invention, a Korean patent application was filed and its counterpart U.S. patent application has recently been filed with the U.S. Patent and Trademark Office. According to the U.S. Patent law, the inventor is only entitled to be an applicant for a patent application. Therefore, although the right to receive patent has been transferred to our client, UTSK, the U.S. Patent and Trademark Office requires filing of documents as enclosed herewith which must be signed by the inventor.

With regard to the assignment, please be informed that signing the enclosed assignment does not mean that you newly transfer something another to somebody, it merely means confirming that you had already assigned the right to receive patent in 2002. As for the Declaration, the signing the declaration means that you are declaring that you are the true and so

GWANG WHA MOON POST OFFICE- CONTENTS CERTIFIED MAIL CERTIFICATE NO. 07026738, 2006-12-01

[Translation]

As explained above, I enclose herewith these documents. Please sign and date the marked portions and return them to us via courier, registered mail or whatever is convenient for you. Any costs to be incurred in this connection are surely responsible to our side. Please send us any receipts for payment in return.

Return Address: Hungkuk Life Insurance Building, 9F, 226 Sinmunno 1-ga, Jongno-gu, Seoul 110-786, Korea

Title of Invention: STRUCTURE OF A MANAGEMENT INFORMATION BASE COMMUNICATION BETWEEN A NETWORK MANAGEMENT SYSTEM AND AN AGENT OF A NETWORK ELEMENT

-Contact Person: Attorney Joo-Young Kim / Attorney Jee Hong YOON
-Telephone: 02-2122-3561 / 02-2122-3515
-E-mail: jykim1@ip.kimchang.com

Attorney Jee Hong YOON (seal)

Enclosure(s)

金·張 法律事務所
KIM & CHANG

서울시 종로구 신문로 1가 226 흥국생명빌딩 9층 우편번호 110-786
전화: (02) 764-8855 / 2122-3900 Fax: (02) 745-5954 / 741-0328 / 763-7434
E-Mail: all@ip.kimchang.com

2006년 12월 1일

수 신 : 강 광 석 님
경기도 고양시 덕양구 화정동 881-4, 203호 (우. 412-270)

제 목 : 미국 특허청 제출용 서명서류 송부의 건 (U.S. Serial No. 10/585,838)
당소 정리 번호 : GP048360 (FE251553)

귀하의 사업에 무궁한 발전을 기원합니다.

당소는 유티스타콤 코리아 유한회사의 대리인인 김&장 특허법률사무소 입니다.

귀하께서는 2002년도에 현대전자산업 주식회사/현대시스콤 재직 중에 개발하신 아래의 발명에 대한 권리를 당시 소속회사의 직무발명 양도규정에 따라 소속회사에 양도하였으며, 현재 이 발명에 대해 특허를 받을 수 있는 권리는 귀하의 소속회사로부터 당소의 의뢰인인 유티스타콤 코리아 유한회사로 이전되어 있는 상태에 있습니다. 이 발명에 대하여는 한국 특허출원을 하고 이어서 현재 미국 특허출원을 진행 중에 있는데, 미국의 특허제도에 따르면 출원시 발명자가 출원인이 되어야 하기 때문에 미국 특허청은 특허를 받을 수 있는 권리가 당소의 의뢰인에게 있다 하더라도 첨부된 바와 같은 서류에 출원인으로서 발명자가 직접 서명한 후 이를 제출하도록 요구하고 있습니다.

첨부된 서류 중 양도증(assignment)과 관련해서는, 귀하께서 이미 이 발명에 대한 권리를 양도한 상태이기 때문에 첨부된 양도증은 이를 확인하는 절차에 불과하며 새로이 무언가를 양도하는 것은 아님을 알려드립니다. 발명자 선언서(declaration)는 귀하께서 이 발명의 발명자임을 선서하는 내용으로 되어 있습니다.

이와 같은 사정으로 첨부 서류를 보내드리오니 서명 후 당소로 반송하여 주시기를 부탁드립니다. 반송은 퀵서비스(착불) 등 귀하께서 편한 방법으로 아래의 당소 주소로 해 주시고 어떤 경우에든 당소에서 비용을 부담할 것이오니 비용 영수증 등도 함께 반송하여 주시면 감사하겠습니다.

이 우편물은 2006-12-01 제 07026738 호에 의하여 내용증명우편물로 발송하였음을 증명함
광화문 우체국장

반송 주소: 서울시 종로구 신문로 1가 226 홍국생명빌딩 9층 김.장특허법률사무소
(우편번호 110-786)

발명의 명칭: STRUCTURE OF A MANAGEMENT INFORMATION BASE COMMUNICATED BETWEEN A NETWORK MANAGEMENT SYSTEM AND AN AGENT OF A NETWORK ELEMENT

-담당자: 김 주 영 변리사/ 윤 지 홍 변리사
-전화: 02-2122-3561 / 02-2122-3515
-E-mail: jykim1@ip.kimchang.com

변리사 윤 지 홍

첨부있음.

Case No.: 05-518-B

DECLARATION AND POWER OF ATTORNEY FOR PATENT APPLICATION

As a below named inventor, I hereby declare that:
My residence, post office address and citizenship are as stated below next to my name.

I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled:

STRUCTURE OF A MANAGEMENT INFORMATION BASE COMMUNICATED BETWEEN A NETWORK MANAGEMENT SYSTEM AND AN AGENT OF A NETWORK ELEMENT

the specification of which is attached hereto unless the following space is checked:

☒ was filed on July 12, 2006 as United States Application Serial Number 10/585,838

I hereby state that I have reviewed and understand the contents of the above-identified specification, including the claims, as amended by any amendment referred to above.

I acknowledge the duty to disclose information which is material to patentability as defined in 37 CFR § 1.56 (including for continuation-in-part applications, material information which became available between the filing date of the prior application and the national or PCT international filing date of the continuation-in-part application).

I hereby claim foreign priority benefits under 35 U.S.C. § 119(a)-(d) or § 365(b) of any foreign application(s) for patent or inventor's certificate, or § 365(a) of any PCT international application which designated at least one country other than the United States, listed below and have also identified below, by checking the box, any foreign application for patent or inventor's certificate, or PCT international application having a filing date before that of the application on which priority is claimed.

Prior Foreign Application(s):

	Number	Country	Day/Month/Year Filed
1.	PCT/KR2005/000141	PCT	14 January 2005
2.	10-2004-0002983	Korea	15 January 2004

I hereby appoint the practitioners associated with the Customer Number provided below to prosecute this application and to transact all business in the Patent and Trademark Office connected therewith, and I direct that all correspondence be addressed to that Customer Number.

Customer Number: **020306**
Principal attorney or agent: Robert J. Irvine, III
Telephone number: 312-913-0001

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

McDONNELL BOEHNEN
HULBERT & BERGHOFF LLP
300 SOUTH WACKER DRIVE
CHICAGO, ILLINOIS 60606
TELEPHONE (312) 913-0001

Full name of first inventor: Kwang Seok KANG

Inventor's signature: _____ Date: _____

Residence: #203, 881-4 Hwajeong-dong, Deokyang-gu, Goyang-si, Gyeonggi-do 412-270 Republic of Korea

Citizenship: Republic of Korea

Post Office Address: #203, 881-4 Hwajeong-dong, Deokyang-gu, Goyang-si, Gyeonggi-do 412-270 Republic of Korea

McDONNELL BOEHNEN
HULBERT & BERGHOFF LLP
300 SOUTH WACKER DRIVE
CHICAGO, ILLINOIS 60606
TELEPHONE (312) 913-0001

ASSIGNMENT

Case No.: 05-518-B
Inventor: **Kwang Seok KANG**
Date of Execution
of Application:

Serial No.: 10/585,838

Filing Date: July 12, 2006

In consideration of One Dollar ($1.00) and other good and valuable considerations in hand paid, the receipt and sufficiency whereof are hereby acknowledged, the undersigned hereby assigns to:

UTSTARCOM KOREA LIMITED

its successors and assigns, the entire right, title and interest in the invention or improvements of the undersigned disclosed in an application for Letters Patent of the United States, entitled:

STRUCTURE OF A MANAGEMENT INFORMATION BASE COMMUNICATED BETWEEN A NETWORK MANAGEMENT SYSTEM AND AN AGENT OF A NETWORK ELEMENT

and identified as:

Case No. 05-518-B

in the offices of McDONNELL BOEHNEN HULBERT & BERGHOFF LLP and in said application and any and all other applications, both United States and foreign, which the undersigned may file, either solely or jointly with others, on said invention or improvements, and in any and all Letters Patent of the United States and foreign countries, which may be obtained on any of said applications, and in any reissue or extension of such patents, and further assigns to said assignee the priority right provided by the International Convention.

The undersigned hereby authorizes and requests the Commissioner of Patents and Trademarks to issue said Letters Patent to said assignee.

The undersigned hereby authorizes and requests the attorneys of record in said application to insert in this assignment the filing date and serial number of said application when officially known, and the date of execution of the application.

The undersigned warrants himself to be the owner of the entire right, title and interest in said invention or improvements and to have the right to make this assignment, and further warrants that there are no outstanding prior assignments, licenses, or other encumbrances on the interest herein assigned.

For said considerations the undersigned hereby agrees, upon the request and at the expense of said assignee, its successors and assigns, to execute any and all divisional, continuation and substitute applications for said invention or improvements, and any necessary oath, affidavit or declaration relating thereto, and any application for the reissue or extension of any Letters Patent that may be granted upon said application, and any and all applications and other documents for Letters Patent in foreign countries on said invention or improvements, that said assignee, its successors or assigns may deem necessary or expedient, and for the said considerations the undersigned authorizes said assignee to apply for patents for

McDONNELL BOEHNEN
HULBERT & BERGHOFF LLP
300 SOUTH WACKER DRIVE
CHICAGO, ILLINOIS 60606
TELEPHONE (312) 913-0001

said invention or improvements in its own name in such countries where such procedure is proper and further agrees, upon the request of said assignee, its successors and assigns, to cooperate to the best of the ability of the undersigned with said assignee, its successors and assigns, in any proceedings or transactions involving such applications or patents, including the preparation and execution of preliminary statements, giving and producing evidence, and performing any and all other acts necessary to obtain, maintain and enforce said Letters Patent, both United States and foreign, and vest all rights therein hereby conveyed in the assignee, its successors and assigns, whereby said Letters Patent will be held and enjoyed by the said assignee, its successors and assigns, to the full end of the term for which said Letters Patent will be granted, as fully and entirely as the same would have been held and enjoyed by the undersigned if this assignment had not been made.

WITNESS my hand and seal this _____ day of _____, _____.

_____
Kwang Seok KANG

State of _____

County of _____

The foregoing instrument was acknowledged before me this _____ day of

_____, _____ by _____.

_____
NOTARY PUBLIC

McDONNELL BOEHNEN
HULBERT & BERGHOFF LLP
300 SOUTH WACKER DRIVE
CHICAGO, ILLINOIS 60606
TELEPHONE (312) 913-0001

HYUNDAI SYSCOMM

社 外 秘

직무 발명 신고서

신고일:2002년 11월30일

발명실 결재	업무코드		승인권자
	주발명자	검토	팀장
직위/성명	SW 장용석	GJ 양진형	CJ 정성권
일 자	11/30	11/30	11/30
보존년한	0.1.2.3.5.10.영구		

현장관리자	검토
	/
관리번호	

법제특허부 결재	업무코드		승인권자
	기안	검토	승인
직위/성명	GW 김희	팀장	/
일 자			
보존년한	1.3.5.10.영구	보안등급	1.2.3 대외비

사내 직무발명보상기준에 의거하여 출원/등록을 의뢰하며,국내/외 등록권리를 양도합니다.

발명자 기재사항

발명의 명칭	NMS의 자동 MIB 정보 구축을 위한 NE Agent의 Meta MIB 구조 설계
발명의 개요	본 발명은 NMS에서 NE Agent로부터 MIB 자체의 정보를 온라인상으로 제공받아 신속, 정확한 망 관리 기능을 발휘할 수 있도록 망 관리 기능 극대화에 초점을 둔 Meta MIB 구조 설계에 대해 기술한다.
관련PROJECT명	
실 시 상 황	□ 착상 □ 설계완료 ■ 시험(완료) □ 사업화(준비중,실시중)
본발명의 발표상황	□ 미발표 □ 발표예정 ■ 旣발표 ※旣발표 또는 발표 예정인 경우 발표(예정)일과 관련논문등 기입 요망 [발표일:2002년 6 월 29일. 관련논문: SNMP 기반 NMS에서 네트웍 관리를 위한 NE MIB의 자동 Import System 설계]
선행특허자료	국 내 / 외 국
출원완급	☑ 보 통 / □ 지 급-->(일이내) — 지급출원 이 유
외국출원	□ 유 (이유:) ☑ 무
KEY WORD	

법제특허부 기재사항

접 수 일	2002년11월30일	대리인	피닉스	전담자관리번호 CM-2002-12-0066
국내출원	☑ 특허 □ 실용 □ 공개기보 □ 출원보류(이유:)			
	심사청구	□ 유 ☑ 무	전략특허PROJECT명	42
외국출원	□ 유 □ 무		출원등급	B
	심의여부	□ 유 □ 무	*대리인 특허명세서작성 참조사항*	

출원국가선정

□ 개별국출원 □ EPO출원 □ PCT출원

1순위		5순위	
2순위		6순위	
3순위		7순위	
4순위		8순위	
비고			

□ 사무소 자체 국내출원 ☑ 특허팀검토후 국내출원
□ 국내외 동시출원

검토의견: 이상

HYUNDAI SYSCOMM

社 外 秘

발명실장 기재사항

< 발명 평가내용 >

구 분	내 용	평가점수
기 술 성	단순 조합 기술임	☐ 1점
	약간 높은 수준을 요하는 기술임	☐ 3점
	고도의 수준을 요하는 기술임	☑ 5점
실현가능성	이론상 실현은 가능하나, 실험계획은 없슴	☐ 1점
	테스트 하려면 관련기술의 발전이 요구됨	☐ 2점
	테스트중이거나 예정임	☐ 3점
	양호한 테스트 결과 얻음(자료첨부 가능)	☑ 5점
	현재 사업화 준비중 또는 실시중임	☐ 7점
효 과	개선된 효과의 수준은? (공정 단순화, Yield, Cost 등의 측면)	☐ 3점 ☑ 2점 ☐ 1점
발명중요도	기술공개로 타사 권리확보를 방어하는 수준임	☐ 1점
	양산에 적용(예정) 가능한 발명임	☑ 3점
	반드시 필요한 독점 기술임	☐ 5점
평가결과		(15) 점

주)※상기 발명 평가표는 반드시 실장이 직접 기재하시기 바랍니다.
※"실현가능성"란에서 5점,7점에 해당된 발명은 증빙 자료가 반드시 필요 합니다.
※평가를 완료하신후 평가결과를 기입 바랍니다.

< 외국출원 평가내용 >

발명의 적용제품 현 황	*적용제품: *관련기술: *적용시기:	*복수제품에 적용되는 경우 전부 기재하시기 바라며, 향후 적용 제품경우 예상시점을 기재요망
평가내용	☐ 절대 필요 ☐ 국내출원후 1년간 관망 ☐ 필요 없음	출원희망국가
	☐ 개별국출원, ☐ EPO출원, ☐ PCT출원	1순위 / 2순위 / 3순위
	기술적측면	4순위 / 5순위 / 6순위 / 7순위 / 8순위
	경제적측면	평가자 성명: 직위: 서명:

HYUNDAI SYSCOMM

社 外 秘

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2. 영문기재시 Fullname을 기재하시기 바람.

HYUNDAI SYSCOMM

Confidential

Employee's Declaration of Invention

Date: November 30, 2002

Invention Team					On-the-job Maintenance Team		Patent Team				
Approval	Work Code		Approving Authority		Reviewer		Approval	Work Code		Approving Authority
	Primary Inventor	Reviewer	Approved by					Drafter	Reviewer	Approved by
	Signed	*signed*	*signed*					*signed*	*signed*	*signed*
Position / Name	SW/KANG, Kwang Seok	GJ/YANG, J. H.	CJ/JEONG, S.H.		/		Position / Name	SW/LEE, Chun Mi	DL/YOON, Hyoung Jin	
Date				Control No.			Date			
Years in Storage	0, 1, 2, 3, 5, 10, Permanent						Years in Storage	1, 3, 5, 10, P	Security Rating	1, 2, 3, Confidential

Under the provisions of the employee's invention compensation policy, I request to proceed with the filing/registration of my invention and to assign its rights for domestic and international registrations.

Statement by Inventor

Title of the Invention	DESIGN FOR A STRUCTURE OF A META MIB (MANAGEMENT INFORMATION BASE) FOR AN NE (NETWORK ELEMENT) AGENT TO AUTOMATICALLY BUILD MIB INFORMATION IN AN NMS (NETWORK MANAGEMENT SYSTEM)
Summary of the Invention	The present invention describes a design of a meta MIB structure, which focuses mainly on maximizing network management functions, wherein said functions are to be performed quickly and accurately by receiving information of MIB from an NE agent via on-line in NMS.
Name(s) of Related Projects	
Status of the Embodiment	☐ Conception ☐ Completed Design ☒ (In, Completed) Testing ☐ (Preparing, In) Business Implementation
Publication Status of the Invention	☐ Unpublished ☐ Expected to be Published※ ☒ Published Earlier※ ※ If checked, please specify the (scheduled) date of publication and related dissertations. [(Scheduled) Date of Publication: June 29, 2002 ; Related dissertations: Design of Automatic Import System of NE MIB for Network Management at SNMP-based NMS]
Prior Art	Korean: Foreign:
Filing Term	☒ Standard ☐ Urgent → (Within days)
Reason for Urgent Filing	
Foreign Filing	☐ Yes (Reason:) ☒No
Key Word	

Statement by Patent Team

Date of Receipt	November 30, 2002	Agent	Phoenix patent office	Hyundai Syscomm Ref.	CM2002-12-0066
Korean Filing	☑ Patent ☐ Utility Model ☐ Journal of Technical Disclosure ☐ Withhold Filing (Reason:)				
	Request for Examination	☐Yes ☒ No	Strategic Patent Project for the Invention	42	
Foreign Filing	☐ Yes ☐ No		Filing Rating	B	
	Deliberation	☐ Yes ☐ No	*Remarks for Agents writing the specification*		

Designating Countries to File					
☐ Direct National Filing ☐ EPO Filing ☐ PCT Filing				☐ Domestic filing without Review ☑ Domestic filing after Patent Team Review ☐ Simultaneous Korean & Foreign Filing	
1st Priority		5th Priority			
2nd Priority		6th Priority		Reviewer's Opinion	OK
3rd Priority		7th Priority			
4th Priority		8th Priority			
Note					

Statement by Manager of Invention Team

< Evaluation of the Invention>

Category	Contents	Evaluation Grade
Technology	Simple technology	☐ 1 point
	Slightly higher technology	☐ 3 point
	Advanced technology	☒ 5 point
Possible Implementation	Theoretically possible to implement, but has no plan for testing	☐ 1 point
	Developments in related technologies are required first for testing	☐ 2 point
	Currently testing or planning to test	☐ 3 point
	Tested and obtained satisfactory results (Attach Documents)	☒ 5 point
	Preparing or currently implementing into one's business	☐ 7 point
Effects	What is the level of improvement? (Simplification of processes, yield, cost etc.)	☐ 3 ☒ 2 ☐ 1 point
Importance	Defending the rights in disclosing the technology	☐ 1 point
	Adaptable (or scheduled) for mass production	☒ 3 point
	Absolutely necessary to obtain exclusive technology	☐ 5 point
Evaluation Result		(15)Point

Note: ※ The Invention Evaluation form must be filled out by the manager of the invention team.
※ Evidence is necessary for those inventions that are rated 5 or 7 points in the section of "Possibility for Implementation."
※ The Evaluation Result should be filled in only after completing the Evaluation.

<Evaluation for Foreign Filing>

Status of products to which the invention was applied	* Applied Product: * Related Technology: * Applied Period:	* For cases applied to multiple products, list all product names. For future cases to be applied, mark the estimated period.
Evaluation	☐ Absolutely necessary ☐ Observe for a year after filing domestically ☐ Not necessary	Designation of Countries 1st Priority 2nd Priority 3rd Priority
	☐ Direct National Filing ☐ EPO Filing ☐ PCT Filing	4th Priority 5th Priority
	Technological Factor	6th Priority 7th Priority 8th Priority
	Economical Factor	Evaluator Name: Position: Signature:

Inventor Information	Primary Inventor	Name	(Korean) 강 광 석	(S/W) Development Group (Network Development) Team						
			(Chinese) 姜 光 錫	Position	SW	Employee ID No.	H23071	Tel (7961)		
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	Joint Inventor	Name	(Korean)	( ) Development Group ( ) Team						
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			(English)	Residence ID		-				%
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		Name	(Korean)	( ) Development Group ( ) Team						
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			(English)	Residence ID						%
		E-mail		Address				Signature		
		Name	(Korean)	( ) Development Group ( ) Team						
			(Chinese)	Position		Employee ID No.		Tel ( )		
			(English)	Residence ID						%
		E-mail		Address				Signature		
		Name	(Korean)	( ) Development Group ( ) Team						
			(Chinese)	Position		Employee ID No.		Tel ( )		
			(English)	Residence ID						%
		E-mail		Address				Signature		
		Name	(Korean)	( ) Development Group ( ) Team						
			(Chinese)	Position		Employee ID No.		Tel ( )		
			(English)	Residence ID						%
		E-mail		Address				Signature		

Note: 1. The full address and e-mail address are required.
2. Write the full name in English.

HYUNDAI SYSCOMM

발명의 명세서

1.발명의 명칭

발명의 실질적 내용에 대해 가장 적절히 표현할수 있는 명칭을 간결하고 명확하게 기재하되 약자는 가급적 피해주시기 바람.

NMS의 자동 MIB 정보 구축을 위한 NE Agent의 Meta MIB 구조 설계

2.발명의 상세한 설명

1)산업상의 이용분야

발명이 무엇에 관한 것이며,어느 기술분야에 적용되는지를 기재하고,타 기술 분야에서도 활용이 가능하면 그 기술분야도 기재하시기 바람.

SNMP 망관리 구조에서 NMS와 NE Agent는 서로 MIB을 Offline으로 공유하는구조이다. 이에 반해 본 발명은 NMS에서 NE Agent로부터 MIB 자체의 정보를 온라인상으로 제공받아 신속, 정확한 망 관리 기능을 발휘할 수 있도록 망 관리 기능 극대화에 초점을 둔 Meta MIB 구조 설계에 관한 것이며, 망관리 기술 분야에 적용 가능하다.

2)종래기술의 설명 및 그 문제점

*본 발명이 속하는 기술분야에서 본 발명과 연관되는 종래기술이 어떻게 실시되는지 기술적 구성이나 개요를 비교적 상세히 설명하고,그 문제를 기재하기 바람.
*본 발명과 관련된 참고문헌이나 특허공보가 있으면 문헌명이나 공보번호를 기재하고, 그 자료를 본 명세서에 첨부하시기 바람.

SNMP 망 관리 구조 모델은 전산망 관리 장비의 망 관리 시스템(NMS : Network Management System) 응용과 전산망 요소(NE : Network Element)의 수행자(Agent) 사이에서 관리 정보 교환에 의해 수행된다. MIB은 SNMP를 사용하여 NE Agent와 NMS 사이에 교환되는 관리 정보를 말한다.SMI로 정의된 MIB은 관리 객체들의 집합이라고 볼 수 있으며, 각각의 관리 객체는 그 유일한 식별자와 특성을 가진다. 각 관리 객체의 식별자는 전역적으로 유일한 값을 가지며, 관리객체의 특성은 SMI에 정의된 형식을 기준으로 구성되게 된다.

NMS와 NE Agent간의 관리 정보 항목에 대한 처리 과정을 수행하기 위해, NMS와 NE Agent는 관리 항목을 기술한 SMI규격의 MIB 정의 문서를 Offline을 통해 공유한다.(4 도면의 간단한 설명 그림1 참조) 즉, MIB은 NMS와 NE Agent 양단간에 그 의미와 형식이 사전에 공유되어야 한다. 그러나 양단간에 공유되지 않으면 NE에 대한 망관리 기능을 발휘하지 못하는 제약점이 생기게 된다. 또한 NE Agent에 새로운 MIB이 추가될경우 NMS에 추가된 MIB을 오프라인으로 알려 주어야 한다. 이것은 신속 정확한 망관리 운영에 문제가 된다.

참고문헌: [1]"SNMP, SNMPv2, and CMIP The Practical Guide to Network-Management Standards", William Stallings,
[2] RFC 1155:" Structure and Identification of Management Information for TCP/IP-based Internets", M. Rose, K. McCloghrie, May. 1990

3)종래 문제점을 해결하기 위한 본 발명의 기술적 원리

*본 발명에서 상기와 같은 기술적 문제점을 어떻게 해결하고 있는지 그 해결책의 요지만을 기재하고, 그 상세한 설명은 다음항에 기재하기 바람.
*어떤 효과를 지닌 어떤기술을 사용하여 어떤 문제점을 해결하였다는 등

본 발명은 종래의 문제점을 극복하기 위해서 NE Agent가 가지고 있는 MIB 자체에 대하여 그 정보를 NMS로 전송하여야 한다. NMS가 NE Agent로 관리 정보를 요청하기 위해 필수적으로 필요한 정보들을 MIB의 형태로 Meta MIB 설계를 함으로써 NMS는 SNMP로 NE Agent의 Meta MIB 정보에 대한 요청으로 사전에 MIB이 공유되지 않더라도, NE Agent가 가지고 있는 MIB을 자동적으로 구성 할수 있게 된다..(4 도면의 간단한 설명 그림2 참조)

4)본 발명의 구성 및 그 전반적인 동작설명

*본 발명은 본 발명이 속하는 기술분야 또는 연관된 기술분야에 종사하는 기술자라면 누구라도 실시할수 있을 정도로 상세하고도 정확한 표현으로 기재하시기 바람.

1. NE Agent의 MIB 정보를 Meta MIB으로의 설계
1.1 SMI로 표현되는 MIB의 정형화 구조
MIB 정보를 표현하기 위한 Meta MIB으로 구조화 시키기 위해서는 NE Agent MIB을 정의하기 위한 기본 구조인 SMI를 Meta MIB으로 표현할 수 있도록 그 구조를 정형화 시켜야 한다. 이러한 정형화 과정을 위해 SMI의 구조 자체를 일반적인 MIB의 형태로 표현하고 SMI를 정형화한 MIB의 인스턴스로 NE Agent MIB의 정보들을 표현함으로써 Meta MIB을 구성한다. 이를 위해 NE Agent MIB 객체들의 공통 특성들을 표현하기 위한 baseInfoTable을 하나의 테이블로하여 NE Agent MIB 객체들의 공통 특성을 반영하는 Meta MIB 테이블를 구성한다. 그리고 objectInfoTable과 trapInfoTable을 각각 생성함으로써 OBJECT-TYPE과 TRAP-TYPE Object들을 표현하는 특성들을 반영시킨다. 그리고 Table의 연관관계와 인덱스를 표현하기 위해 sequenceInfoTable을 생성하고, INTEGER syntax의 의미를 반영하기 위한 syntaxIntegerTable을 생성한다.

1.2 MIB 정보의 Meta MIB으로의 Mapping
SMI구조로 정의된 MIB 정보를 표현하기 위한 Meta MIB의 객체중 MIB 객체가 표현하는 공통 부분에 해당하는 baseInfoTable에 대한 객체를 살펴보면 다음과 같이 매핑 되어 설계된다.
baseInfoTable의 baseInfoIndex는 테이블의 인스턴스를 구분하는 인덱스로 사용된다. baseInfoTable의 moduleName은 NE Agent MIB의 DEFINITOINS과 매핑된다. moduleName으로 NE Agent에서 사용되는 MIB의 종류를 알 수 있다. baseInfoTable의 objectName은 NE Agent MIB에 나타나는 모든 관리 객체들의 이름과 매핑된다. baseInfoTable의 objectType은 NE Agent MIB의 관리 객체들의 타입을 표현하는 것으로 여기에 해당하는 것은 OBJECT IDENTIFIER, OBJECT-TYPE, TRAP-TYPE, NOTIFICATION-TYPE 등이 있다. baseInfoTable의 objectType은 Abstract Syntax로 INTEGER를 사용하여 object-identifier(1), object-type(2), trap-type(3), notification-type(4)으로 매핑한다. baseInfoTable의 objectID는 NE Agent MIB의 관리 객체 OID와 매핑되며, Abstract Syntax로 OBJECT IDENTIFIER를 사용한다. 마지막으로 baseInfoTable의 description은 MIB 관리 객체의 DESCRIPTION 부분과 매핑된다.

4) 항에서 계속

1.3 OBJECT-TYPE 객체의 Meta MIB Mapping

NE Agent MIB에서 관리 객체가 OBJECT-TYPE으로 선언되는 객체에 대하여 Meta MIB으로 매핑하는 방법을 기술하면 다음과 같다.

Meta MIB안에서 objectInfoTable은 OBJECT-TYPE으로 표현되는 객체에 대한 특성을 반영할 수 있도록 설계되었다. ObjectInfoTable의 objectInfoEntry는 인덱스로 objectInfoIndex와 baseInfoIndex를 사용한다. objectInfoIndex는 테이블의 인스턴스를 구분하는 인덱스이고 baseInfoIndex는 baseInfoTable에서 objectType객체의 값이 object-type인 경우에 해당하는 인덱스의 값을 나타낸다. objectInfoTable의 objectBaseSyntax는 NE Agent MIB의 SYNTAX를 표현한 것으로 ASN.1의 Primitive Type인 INTEGER, OCTET STRING, OBJECT IDENTIFIER와 Constructor Type인 SEQUENCE, SEQUENCE OF가 해당되며, Abstract Syntax로 INTEGER를 사용하여 integer(1), octet_string(2), object_identifier(3), sequence_of(4), sequence(5)으로 매핑한다. objectInfoTable의 objectComposedSyntax는 NE Agent MIB의 SYNTAX가 재정의 된 경우를 매핑한다. 예를 들면 RFC1213의 특정 객체의 SYNTAX가 DisplayString 경우 OCTET STRING이 재정의 된 것이다. 이와 같이 재정의된 SYNTAX에 대해 매핑하며 재정의 되지 않은 SYNTAX는 objectBaseSyntax와 동일 하게 매핑한다. objectComposedSyntax는 Abstract Syntax로 DisplayString을 사용한다. objectInfoTable의 objectStatus는 NE Agent MIB 객체의 STATUS 종류를 나타내는 것으로 Abstract Syntax로 INTEGER를 사용하여 mandatory(1), optional(2), o NE Agent MIB 객체의 ACCESS 종류를 나타내는 것으로 Abstract Syntax로 INTEGER를 사용하여 read-only(1), read-write(2), write-only(3), not-accessible(4)로 매핑한다.

Meta MIB의 syntaxIntegerTable은 NE Agent MIB의 SYNTAX가 INTEGER일때 subtype을 매핑하기 위해 설계되었다. 설계된 객체를 살펴보면 다음과 같다. syntaxIntegerEntry는 인덱스로 syntaxIntegerInfoIndex와 baseInfoIndex를 사용한다. syntaxIntegerInfoIndex는 테이블의 인스턴스를 구분하는 인덱스이고, baseInfoIndex는 baseInfoTable에서 objectType객체의 값이 object-type이면서 objectInfoTable에서 objectBaseSyntax의 값이 integer인 객체의 인덱스 값을 표현한다. syntaxIntegerValue는 NE Agent MIB의 SYNTAX INTEGER의 subtype과 매핑된다. syntaxIntegerValueString은 NE Agent MIB의 SYNTAX INTEGER의 subtype의 표현 문자열과 일대일 매핑된다.

Meta MIB의 sequenceInfoTable은 NE Agent MIB의 SYNTAX가 SEQUENCE OF인 테이블의 경우를 매핑하기 위해 설계되었다. 인덱스로 sequenceIndex와 baseInfoIndex를 사용한다. sequenceIndex는 인스턴스를 구분하는 인덱스이다. baseInfoIndex는 objectInfoTable에서 objectBaseSyntax의 값이 sequence-of인 baseInfoIndex의 값을 나타낸다. sequenceIndexValue는 NE Agent MIB의 테이블 인덱스와 매핑되는 것으로 값은 baseInfoIndex중 NE Agent MIB의 테이블 인덱스를 나타내는 값과 일치한다. sequenceEntryInfo는 NE Agent MIB의 엔트리 인스턴스와 매핑되는 것으로 값은 baseInfoIndex중 NE Agent MIB의 엔트리 인스턴스를 나타내는 값과 일치한다.

1.4 TRAP-TYPE 객체의 Meta MIB Mapping

NE Agent MIB의 Trap 객체에 대한 Meta MIB으로의 매핑 설계 방법을 기술하면 다음과 같다.

Trap 객체 처리를 위해 trapInfoTable을 설계하였다. trapInfoTable에 기술된 인덱스는 trapInfoIndex와 baseInfoIndex이다. trapInfoIndex는 인스턴스를 구분하는 인덱스이고, baseInfoIndex는 baseInfoTable의 객체인 objectType의 값이 trap-type 이거나 notification-type인 경우의 인덱스 값을 나타낸다. trapInfoTable의 trapEnterprise 객체는 NE Agent MIB의 TRAP-TYPE 객체의 ENTERPRISE 값과 매핑되며, TRAP-TYPE이 아니라 NOTIFICATION-TYPE일 경우는 NULL 값으로 매핑한다. trapInfoTable의 trapVariable 객체는 NE Agent MIB에서 TRAP-TYPE 객체의 VARIABLES 값과 매핑되며, NOTIFICATION-TYPE일 경우는 OBJECTS의 값을 매핑 한다.

1.5 Meta MIB의 정의

다음과 같이 Meta MIB을 정의하였다.

4) 항에서 계속

```
MibInfo-MIB DEFINITIONS ::= BEGIN

IMPORTS
        mgmt, NetworkAddress, IpAddress, Counter, Gauge, Integer32,
            TimeTicks, enterprises
          FROM RFC1155-SMI
        OBJECT-TYPE
            FROM RFC-1212
  DisplayString FROM RFC1213-MIB;

--
--
--

mibInfo     OBJECT IDENTIFIER ::= { enterprises 7961 }

baseInfo    OBJECT IDENTIFIER ::= { mibInfo 1 }

syntaxInfo  OBJECT IDENTIFIER ::= { mibInfo 2 }


 baseInfoTable OBJECT-TYPE
SYNTAX  SEQUENCE OF BaseInfoEntry
ACCESS not-accessible
STATUS mandatory
DESCRIPTION
  " This Table is for MIB Object base information."
::= { baseInfo 1 }

 baseInfoEntry OBJECT-TYPE
SYNTAX BaseInfoEntry
ACCESS not-accessible
STATUS mandatory
DESCRIPTION
  ""
INDEX { baseInfoIndex }
::= { baseInfoTable 1 }

 BaseInfoEntry ::=
SEQUENCE {
 baseInfoIndex
  INTEGER,
 moduleName
  DisplayString,
 objectName
  DisplayString,
 objectType
  INTEGER,
 objectID
  OBJECT IDENTIFIER,
```

4) 항에서 계속

```
 description
  DisplayString
}

 baseInfoIndex OBJECT-TYPE
SYNTAX INTEGER (0..2147483647)
ACCESS read-only
STATUS mandatory
DESCRIPTION
  " baseInfoIndex distinguish each object"
::= { baseInfoEntry 1 }

 moduleName OBJECT-TYPE
SYNTAX  DisplayString
ACCESS read-only
STATUS mandatory
DESCRIPTION
  " Module Name of MIB File"
::= { baseInfoEntry 2 }

 objectName OBJECT-TYPE
SYNTAX DisplayString
ACCESS read-only
STATUS mandatory
DESCRIPTION
  " Object Name"
::= { baseInfoEntry 3 }

 objectType OBJECT-TYPE
SYNTAX INTEGER {
 object-type(1),
 object-identifier(2),
 trap-type(3),
 notification-type(4)
 }
ACCESS read-only
STATUS mandatory
DESCRIPTION
  "Object type of each object"
::= { baseInfoEntry 4 }

 objectID OBJECT-TYPE
SYNTAX OBJECT IDENTIFIER
ACCESS read-only
STATUS mandatory
DESCRIPTION
  "Object identifier of MIB object"
::= { baseInfoEntry 5 }
```

4) 항에서 계속

```
 description OBJECT-TYPE
 SYNTAX DisplayString
 ACCESS read-only
 STATUS mandatory
 DESCRIPTION
   "Description of MIB object"
 ::= { baseInfoEntry 6 }

 objectInfoTable OBJECT-TYPE
SYNTAX SEQUENCE OF ObjectInfoEntry
ACCESS read-only
STATUS mandatory
DESCRIPTION
  ""
::= { baseInfo 2 }

 objectInfoEntry OBJECT-TYPE
SYNTAX ObjectInfoEntry
ACCESS not-accessible
STATUS mandatory
DESCRIPTION
  ""
INDEX { baseInfoIndex }
::= { objectInfoTable 1 }

 ObjectInfoEntry ::=
SEQUENCE {
 objectInfoIndex
  INTEGER,
 objectBaseInfoIndexValue
  INTEGER,
 objectBaseSyntax
  INTEGER,
 objectComposedSyntax
  DisplayString,
 objectStatus
  INTEGER,
 objectAccess
  INTEGER
}

 objectInfoIndex OBJECT-TYPE
SYNTAX INTEGER (0..2147483647)
ACCESS read-only
STATUS mandatory
DESCRIPTION
  ""
::= { objectInfoEntry 1 }
```

4) 항에서 계속

```
objectBaseInfoIndexValue OBJECT-TYPE
SYNTAX INTEGER (0..2147483647)
ACCESS read-only
STATUS mandatory
DESCRIPTION
  ""
::= { objectInfoEntry 2 }

objectBaseSyntax OBJECT-TYPE
SYNTAX INTEGER (0..2147483647)
ACCESS  read-only
STATUS mandatory
DESCRIPTION
  ""
::= { objectInfoEntry 3 }

objectComposedSyntax OBJECT-TYPE
SYNTAX DisplayString
ACCESS read-only
STATUS mandatoryB4
DESCRIPTION
  ""
::=  { objectInfoEntry 4 }

objectStatus OBJECT-TYPE
SYNTAX INTEGER {
  current(1),
  deprecated(2),
  obsolete(3),
  mandatory(4),
  optional(5)
  }

ACCESS read-only
STATUS mandatory
DESCRIPTION
  ""
::= { objectInfoEntry 5 }

objectAccess OBJECT-TYPE
SYNTAX INTEGER {
  not-accessible(1),
  accessible-for-notify(2),
  read-only(3),
  read-write(4),
  read-create(5)
  }
ACCESS read-only
STATUS mandatory
DESCRIPTION
  ""
```

4) 항에서 계속

```
::= { objectInfoEntry 6 }

 trapInfoTable OBJECT-TYPE
SYNTAX SEQUENCE OF TrapInfoEntry
ACCESS not-accessible
STATUS mandatory
DESCRIPTION
  ""
::= { baseInfo 3 }

 trapInfoEntry OBJECT-TYPE
SYNTAX TrapInfoEntry
ACCESS not-accessible
STATUS mandatory
DESCRIPTION
  ""
::= { trapInfoTable 1 }

 TrapInfoEntry ::=
SEQUENCE {
 trapInfoIndex
  INTEGER,
 trapBaseInfoIndexValue
  INTEGER,
 trapEnterprise
  OBJECT IDENTIFIER,
 trapVariable
  DisplayString
}

 trapInfoIndex OBJECT-TYPE
SYNTAX INTEGER (0..2147483647)
ACCESS read-only
STATUS mandatory
DESCRIPTION
  ""
::= { trapInfoEntry 1 }

 trapBaseInfoIndexValue OBJECT-TYPE
SYNTAX INTEGER (0..2147483647)
ACCESS read-only
STATUS mandatory
DESCRIPTION
  ""
::= { trapInfoEntry 2 }

 trapEnterprise OBJECT-TYPE
SYNTAX OBJECT IDENTIFIER
ACCESS read-only
STATUS mandatory
```

4) 항에서 계속

```
 DESCRIPTION
  ""
 ::= { trapInfoEntry 3 }

 trapVariable OBJECT-TYPE
SYNTAX DisplayString
ACCESS read-only
STATUS mandatory
DESCRIPTION
  ""
::= { trapInfoEntry 4 }


 syntaxIntegerTable OBJECT-TYPE
SYNTAX SEQUENCE OF SyntaxIntegerEntry
ACCESS not-accessible
STATUS mandatory
DESCRIPTION
  ""
::= { syntaxInfo 1 }

 syntaxIntegerEntry OBJECT-TYPE
SYNTAX SyntaxIntegerEntry
ACCESS not-accessible
STATUS mandatory
DESCRIPTION
  ""
INDEX { baseInfoIndex }
::= { syntaxIntegerTable 1 }

 SyntaxIntegerEntry ::=
SEQUENCE {
 syntaxIntegerInfoIndex
  INTEGER,
 syntaxBaseInfoIndexValue
  INTEGER,
 syntaxIntegerValue
  INTEGER
}

 syntaxIntegerInfoIndex OBJECT-TYPE
SYNTAX INTEGER (0..2147483647)
ACCESS read-only
STATUS mandatory
DESCRIPTION
  ""
::= { syntaxIntegerEntry 1 }

 syntaxBaseInfoIndexValue OBJECT-TYPE
SYNTAX INTEGER (0..2147483647)
```

4) 항에서 계속

```
 ACCESS read-only
 STATUS mandatory
 DESCRIPTION
  ""
 ::= { syntaxIntegerEntry 2 }

 syntaxIntegerValue OBJECT-TYPE
SYNTAX INTEGER (0..2147483647)
ACCESS read-only
STATUS mandatory
DESCRIPTION
  ""
::= { syntaxIntegerEntry 3 }

   sequenceInfoTable OBJECT-TYPE
SYNTAX SEQUENCE OF SequenceInfoEntry
ACCESS not-accessible
STATUS mandatory
DESCRIPTION
  ""
::= { syntaxInfo 2 }

 sequenceInfoEntry OBJECT-TYPE
SYNTAX SequenceInfoEntry
ACCESS not-accessible
STATUS mandatory
DESCRIPTION
  ""
INDEX { BaseInfoIndex }
::= { sequenceInfoTable 1 }

 SequenceInfoEntry ::=
SEQUENCE {
 sequenceIndex
  INTEGER,
 sequenceBaseInfoTableIndexValue
  INTEGER,
 sequenceIndexValue
  INTEGER
}

 sequenceIndex OBJECT-TYPE
SYNTAX INTEGER (0..2147483647)
ACCESS read-only
STATUS mandatory
DESCRIPTION
  ""
::= { sequenceInfoEntry 1 }

 sequenceBaseInfoTableIndexValue OBJECT-TYPE
```

4) 항에서 계속

```
    SYNTAX INTEGER (0..2147483647)
    ACCESS read-only
    STATUS mandatory
    DESCRIPTION
      ""
    ::= { sequenceInfoEntry 2 }

     sequenceIndexValue OBJECT-TYPE
    SYNTAX INTEGER (0..2147483647)
    ACCESS read-only
    STATUS mandatory
    DESCRIPTION
      ""
    ::= { sequenceInfoEntry 3 }


END
```

5)본 발명의 다른 실시예

4)항에 기재된 본 발명의 주요 실시예 이외에 다른 실시예가 있으면 도면을 도시하고, 그 내용을 실시할 수 있을 정도로 구체화 하여 기재.

6)본 발명의 효과

본 발명과 종래기술과의 구성 및 동작의 차이에서 오는 효과를 구체적으로 기재하고,부수적으로 발생되는 이점도 기재하나,단 기술적인 근거가 없는 막연한 경제적 효과 등은 기재 불필요.

본 발명은 SNMP에서 NMS와 NE Agent사이에 교환하는 관리정보인 MIB을 정의하는 기본 구조로써의 SMI를 MIB의 형태로 Meta MIB을 설계하여 종래 기술의 구성에서 오는 NMS와 NE Agent간의 MIB Offline 공유에 대해 NE Agent에 Meta MIB을 구성하여 Online으로 NMS는 자동적으로 NE Agent의 MIB을 공유하게 됨으로 인하여 망이 점점 고도화되고 복잡해짐으로 인한 망 운용의 자동화 기능에 효과가 있다.

HYUNDAI SYSCOMM

3.발명의 권리보호 범위

본 항은 발명의 명세서에 기재된 내용중 권리로서 보호 받고자 하는 사항을 기재하되, 본 발명에 의해 새롭게 창작된 구성 혹은 기능만을 기재함.특히,그중 보호를 받아야할 부분이나, 또 다른 실시예가 있는 경우 이를 다른 항으로 명확하고,간결하게 기재하시기 바람.

1) MIB 객체들의 공통 특성과 매핑하는 baseInfoTable 구조 및 그 구성 객체
   - baseInfoTable의 baseInfoindex, moduleName, objectName, objectType, objectID, description
2) MIB의 OBJECT-TYPE과 TRAP-TYPE Object들을 매핑하는 objectInfoTable과 trapInfoTable 구조 및 그 구성 객체
   - objectInfoTable의 objectInfoIndex, objectInfoBaseSyntax, objectComposedSyntax, objectStatus, objectAccess
   - trapInfoTable의 trapInfoIndex, trapEnterprise, trapVariable
3) MIB의 SYNTAX가 SEQUENCE OF인 테이블을 매핑하는 sequenceInfoTable 구조 및 그 구성 객체
   - sequenceInfoTable의 sequenceIndex, syntaxIndexValue, sequenceEntryInfo
4) MIB의 SYNTAX가 INTEGER일때 subtype을 매핑하기 위한 syntaxIntegerTable 구조 및 그 구성 객체
   - syntaxInfoTable의 syntaxIntegerInfoIndex, syntaxIntegerValue, syntaxIntegerValueString

4. 도면의 간단한 설명

※도면의 도시된 내용에 따라 발명자가 의도했던 내용이 변할수 있으므로 본 발명서에 필요한 도면을 정확하게 표시하여,명세서 뒤에 반드시 첨부하시기 바람.
※ ①전자전기회로 관련 출원은 회로도,블록도,FLOW CHART,특성그래프 등이 첨부되어야함.
②기계관련 출원은 전체 구조도,상세 구조도,투시도 등이 첨부되어야 하며,
③공정관련 출원은 전체공정 계통도와 상세공정도 및 특성그래프 등이 첨부되어야 함.
※본 항에 예를들에 "제1도는 XXX 회로도,제2도는 ...소자의 단면도… ,"와 같이 기재바람.
※도면의 필요한 부분에 대해서는 그 명칭을 본 항 하단부 아래에 기재하시기 바람.
(<예>1:제어부 2:감지부)

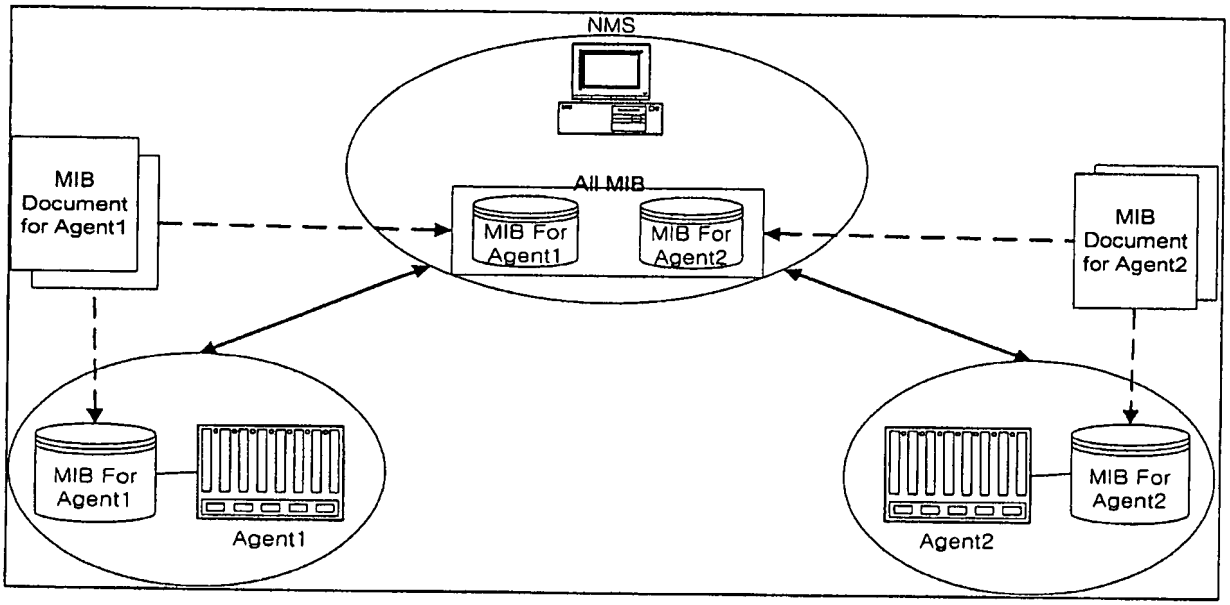


그림 1. 일반적인 MIB 공유 구조

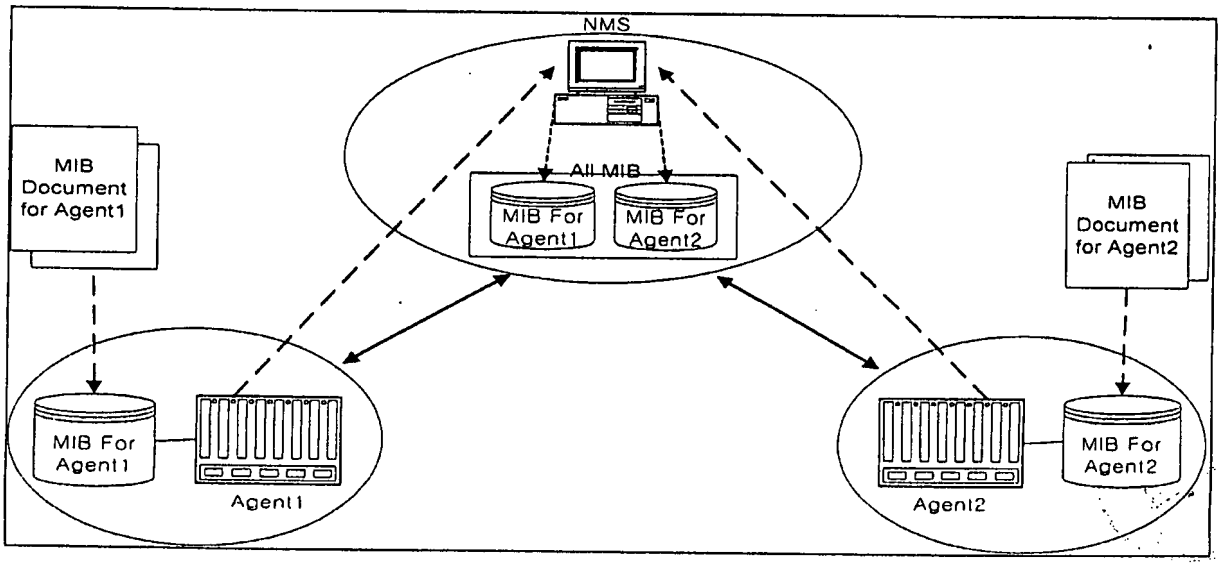


그림 2. Meta MIB을 사용한 MIB 공유구조

4. 도면의 간단한 설명

그림 3은 Meta MIB을 트리구조로 나타낸 그림이다.

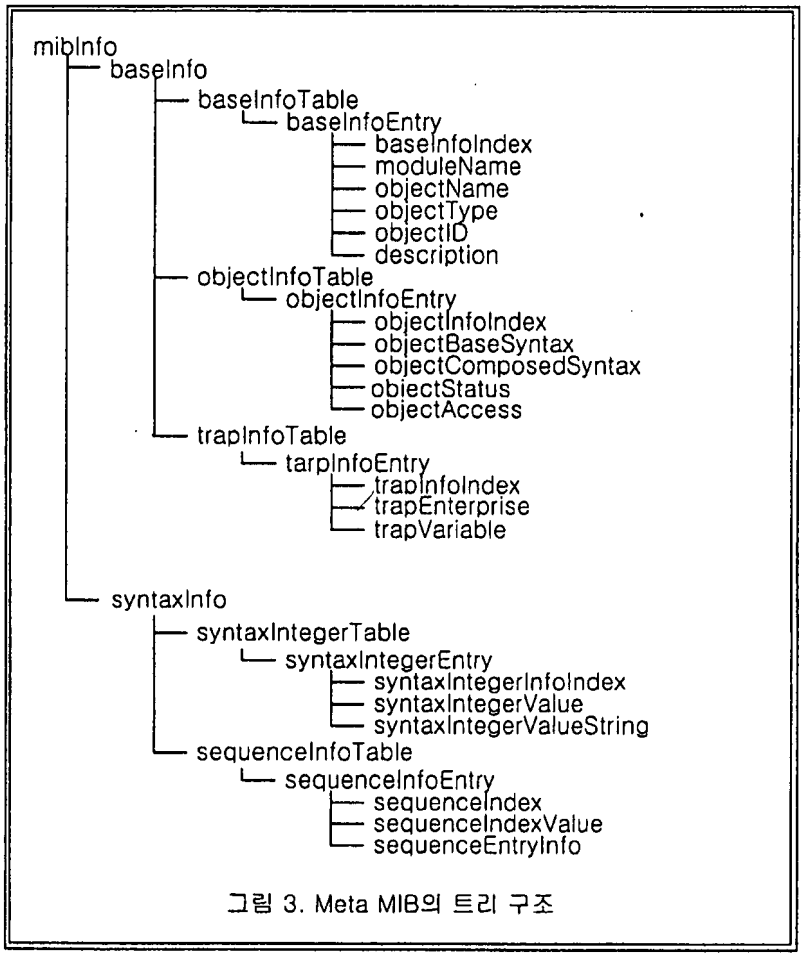


그림 3. Meta MIB의 트리 구조

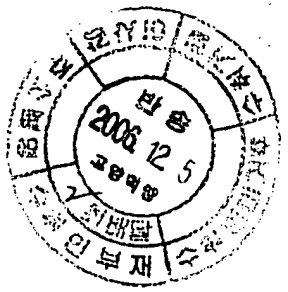
EXHIBIT 2

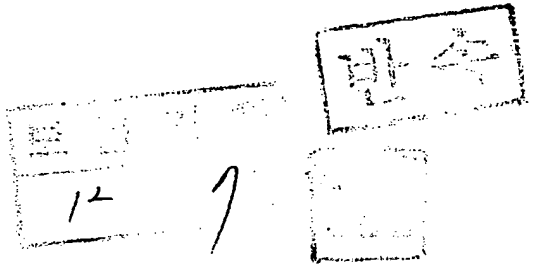
[Translation]

From Kim & Chang
To Mr. Kwang Seok KANG
#203, 881-4 Hwajeong-dong, Deokyang-gu, Goyang-si, Gyeonggi-do 412-270, Republic of Korea

[Mail Return Notice by Post Office]
☑ delivery date: 2006-12-07

[Reason for Return]
☑ **Recipient not present** ☐ Recipient has moved ☐ Recipient refused to accept package ☐ Incorrect address
☐ Recipient does not reside at indicated address

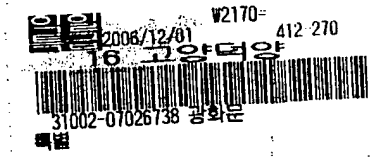




경기도 고양시 덕양구 화정동 881-4 203호

강 광 석 님 귀하

412-270



US 10/585,838
DOC.2

EXHIBIT 3

[Translation]

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KIM & CHANG

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March 2, 2007

To. KANG, Kwang Seok
#203, 881-4 Hwajeong-dong, Deokyang-gu, Goyang-si, Gyeonggi-do 412-270, Republic of Korea

Re. Declaration and Power of Attorney and Assignment to be filed with U.S. Patent and Trademark Office (U.S. Serial No. 10/585,838)
K&C Ref.: GP048360/FE251553

I hope your business is prospering.

I am a patent attorney for a law firm, Kim & Chang, and contacting you on behalf of my client UTStarcom Korea Limited.

You had assigned your invention as identified on the next page to your former company in 2002, which was conceived when you were working for Hyundai Electronics Industries, Co., Ltd./ Hyundai Syscomm, Inc. under the provisions of the employee's invention compensation policy of the company. Therefore, the right to receive patent for the invention was transferred to the former company. Recently, the right to receive patent was transferred to our client, UTStarcom Korea Limited, hereinafter referred to as "UTSK" from your former company. With respect to this invention, a Korean patent application was filed and its counterpart U.S. patent application has recently been filed with the U.S. Patent and Trademark Office. According to the U.S. Patent law, the inventor is only entitled to be an applicant for a patent application. Therefore, although the right to receive patent has been transferred to our client, UTSK, the U.S. Patent and Trademark Office requires filing of documents as enclosed herewith which must be signed by the inventor.

With regard to the assignment, please be informed that signing the enclosed assignment does not mean that you newly transfer something another to somebody, it merely means confirming that you had already assigned the right to receive patent in 2002. As for the Declaration, the signing the declaration means that you are declaring that you are the true and sole inventor of this invention.

[Translation]

As explained above, I enclose herewith these documents. Please sign and date the marked portions and return them to us via courier, registered mail or whatever is convenient for you. Any costs to be incurred in this connection are surely responsible to our side. Please send us any receipts for payment in return.

Return Address: Hungkuk Life Insurance Building, 9F, 226 Sinmunno 1-ga, Jongno-gu, Seoul 110-786, Korea

Title of Invention: STRUCTURE OF A MANAGEMENT INFORMATION BASE COMMUNICATION BETWEEN A NETWORK MANAGEMENT SYSTEM AND AN AGENT OF A NETWORK ELEMENT

-Contact Person: Attorney Joo-Young Kim / Attorney Jee Hong YOON
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Attorney Jee Hong YOON (seal)

Enclosure(s): Inventor's Declaration of Invention Disclosure
U.S. Application as filed
Inventor's Declaration and Assignment documents to be filed with U.S. Patent and Trademark Office

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2007년 3월 2일

수 신 : 강 광 석 님
경기도 고양시 덕양구 화정동 881-4, 203호 (우. 412-270)

제 목 : 미국 특허청 제출용 서명서류 송부의 건 (U.S. Serial No. 10/585,838)
당소 정리 번호 : GP048360 (FE251553)

귀하의 사업에 무궁한 발전을 기원합니다.

당소는 유티스타콤 코리아 유한회사의 대리인인 김&장 특허법률사무소 입니다.

귀하께서는 2002년도에 현대전자산업 주식회사/현대시스콤 재직 중에 개발하신 아래의 발명에 대한 권리를 당시 소속회사의 직무발명 양도규정에 따라 소속회사에 양도하였으며, 현재 이 발명에 대해 특허를 받을 수 있는 권리는 귀하의 소속회사로부터 당소의 의뢰인인 유티스타콤 코리아 유한회사로 이전되어 있는 상태에 있습니다. 이 발명에 대하여는 한국 특허출원을 하고 이어서 현재 미국 특허출원을 진행 중에 있는데, 미국의 특허제도에 따르면 출원시 발명자가 출원인이 되어야 하기 때문에 미국 특허청은 특허를 받을 수 있는 권리가 당소의 의뢰인에게 있다 하더라도 첨부된 바와 같은 서류에 출원인으로서 발명자가 직접 서명한 후 이를 제출하도록 요구하고 있습니다.

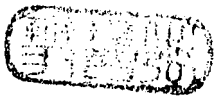
첨부된 서류 중 양도증(assignment)과 관련해서는, 귀하께서 이미 이 발명에 대한 권리를 양도한 상태이기 때문에 첨부된 양도증은 이를 확인하는 절차에 불과하며 새로이 무언가를 양도하는 것은 아님을 알려드립니다. 발명자 선언서(declaration)는 귀하께서 이 발명의 발명자임을 선서하는 내용으로 되어 있습니다.

이와 같은 사정으로 첨부 서류를 보내드리오니 서명 후 당소로 반송하여 주시기를 부탁드립니다. 반송은 퀵서비스(착불) 등 귀하께서 편한 방법으로 아래의 당소 주소로 해 주시고 어떤 경우에든 당소에서 비용을 부담할 것이오니 비용 영수증 등도 함께 반송하여 주시면 감사하겠습니다.

반송 주소: 서울시 종로구 신문로 1 가 226 홍국생명빌딩 9 층 김.장특허법률사무소
(우편번호 110-786)

발명의 명칭: STRUCTURE OF A MANAGEMENT INFORMATION BASE COMMUNICATED BETWEEN A NETWORK MANAGEMENT SYSTEM AND AN AGENT OF A NETWORK ELEMENT

-담당자: 김 주 영 변리사/ 윤 지 홍 변리사
-전화: 02-2122-3561 / 02-2122-3515
-E-mail: jykim1@ip.kimchang.com

변리사 윤 지 홍 

첨부물: 발명신고서 사본 1부.
미국출원용 명세서 사본 1부.
미국특허청 제출용 발명자 선언서 및 양도증 원본 각 1부.

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직무 발명 신고서

신고일:2002년 11월30일

발명실	결재	업무코드		승인권자	현장관리자	검토	법제특허부	결재	업무코드		승인권자
		주발명자	검토	팀장					기안	검토	승인
	직위/성명	SW 양승석	GJ 안지현	CJ 정성현		/		직위/성명	SW 양승석		/
	일 자	11/30	11/30	11/30	관리번호			일 자			
	보존년한	0.1.2.3.5.10.영구						보존년한	1.3.5.10.영구	보안등급	1.2.3 대외비

사내 직무발명보상기준에 의거하여 출원/등록을 의뢰하며,국내/외 등록권리를 양도합니다.

발명자 기재사항

발명의 명칭	NMS의 자동 MIB 정보 구축을 위한 NE Agent의 Meta MIB 구조 설계
발명의 개요	본 발명은 NMS에서 NE Agent로부터 MIB 자체의 정보를 온라인상으로 제공받아 신속, 정확한 망 관리 기능을 발휘할 수 있도록 망 관리 기능 극대화에 초점을 둔 Meta MIB 구조 설계에 대해 기술한다.
관련PROJECT명	
실 시 상 황	□ 착상 □ 설계완료 ■ 시험(완료) □ 사업화(준비중,실시중)
본발명의 발표상황	□ 미발표 □ 발표예정 ■ 旣발표 ※旣발표 또는 발표 예정인 경우 발표(예정)일과 관련논문등 기입 요망 [발표일:2002년 6 월 29일. 관련논문: SNMP 기반 NMS에서 네트웍 관리를 위한 NE MIB의 자동 Import System 설계]
선행특허자료	국 내 : 외 국 :
출원완급	☑ 보 통 □ 지 급-->(____ 일이내) / 지급출원 이 유 :
외국출원	□ 유 (이유:) ☑ 무
KEY WORD	

법제특허부 기재사항

접 수 일	2002년 11월 30일	대리인	피닉스	전담자관리번호 CM2002-12-0066
국내출원	☑ 특허 □ 실용 □ 공개기보 □ 출원보류(이유:)			
	심사청구 □ 유 ☑ 무	전략특허PROJECT명	42	
외국출원	□ 유 □ 무	출원등급	B	
	심의여부 □ 유 □ 무	*대리인 특허명세서작성 참조사항*		

출원국가선정				
□ 개별국출원 □ EPO출원 □ PCT출원				□ 사무소 자체 국내출원 ☑ 특허팀검토후 국내출원 □ 국내외 동시출원
1순위		5순위		검토의견: 이상
2순위		6순위		
3순위		7순위		
4순위		8순위		
비고				

HYUNDAI SYSCOMM

발명실장 기재사항

< 발명 평가내용 >

구 분	내 용	평가점수
기 술 성	단순 조합 기술임	☐ 1점
	약간 높은 수준을 요하는 기술임	☐ 3점
	고도의 수준을 요하는 기술임	☑ 5점
실현가능성	이론상 실현은 가능하나, 실험계획은 없슴	☐ 1점
	테스트 하려면 관련기술의 발전이 요구됨	☐ 2점
	테스트중이거나 예정임	☐ 3점
	양호한 테스트 결과 얻음(자료첨부 가능)	☑ 5점
	현재 사업화 준비중 또는 실시중임	☐ 7점
효 과	개선된 효과의 수준은? (공정 단순화, Yield, Cost 등의 측면)	☐ 3점 ☑ 2점 ☐ 1점
발명중요도	기술공개로 타사 권리확보를 방어하는 수준임	☐ 1점
	양산에 적용(예정) 가능한 발명임	☑ 3점
	반드시 필요한 독점 기술임	☐ 5점
평가결과		(15) 점

주)※상기 발명 평가표는 반드시 실장이 직접 기재하시기 바랍니다.
※"실현가능성"란에서 5점,7점에 해당된 발명은 증빙 자료가 반드시 필요 합니다.
※평가를 완료하신후 평가결과를 기입 바랍니다.

< 외국출원 평가내용 >

발명의 적용제품 현 황		
	*적용제품:	*복수제품에 적용되는 경우 전부 기재하시기 바라며, 향후 적용 제품경우 예상시점을 기재요망
	*관련기술:	
	*적용시기:	

평가내용			
	☐ 절대 필요	출원희망국가	
	☐ 국내출원후 1년간 관망	1순위	
	☐ 필요 없음	2순위	
	☐ 개별국출원, ☐ EPO출원, ☐ PCT출원	3순위	
	기술적측면	4순위	
		5순위	
		6순위	
		7순위	
		8순위	
	경제적측면	평가자	
		성명: 직위: 서명:	

HYUNDAI SYSCOMM

社 外 秘

발명자 인적사항								
발명자 1	성명	(한글) 강 광 석	(S/W) 개발 Group (네트웍 개발)실					
		(한문) 姜 光 錫	직위	사원	사번	H23812	TEL (7961)	
		(영문) Kang Kwang Seok	주민등록No	741015 - 1233719				
	E-mail	ksk74@hysyscomm.com	주소	(412-270)경기도 고양시 덕양구 화정동 881-4 203호			서 명	
발명자 2	성명	(한글)	( ) 개발 Group ( )실					
		(한문)	직위		사번		TEL ( )	
		(영문)	주민등록No	-				
	E-mail		주소	(-)			서 명	
발명자 3	성명	(한글)	( ) 개발 Group ( )실					
		(한문)	직위		사번		TEL ( )	
		(영문)	주민등록No	-				
	E-mail		주소	(-)			서 명	
발명자 4	성명	(한글)	( ) 개발 Group ( )실					
		(한문)	직위		사번		TEL ( )	
		(영문)	주민등록No	-				
	E-mail		주소	(-)			서 명	
발명자 5	성명	(한글)	( ) 개발 Group ( )실					
		(한문)	직위		사번		TEL ( )	
		(영문)	주민등록No	-				
	E-mail		주소	(-)			서 명	
발명자 6	성명	(한글)	( ) 개발 Group ( )실					
		(한문)	직위		사번		TEL ( )	
		(영문)	주민등록No	-				
	E-mail		주소	(-)			서 명	

㈜1. 주소는 상세히 기재하시고, E-mail은 반드시 *회사계정*으로 기재하시기 바람.
2. 영문기재시 Fullname을 기재하시기 바람.

HYUNDAI SYSCOMM

Confidential

Employee's Declaration of Invention

Date: November 30, 2002

Invention Team	Approval	Work Code		Approving Authority	On-the-job Maintenance Team	Reviewer	Patent Team	Approval	Work Code		Approving Authority
		Primary Inventor	Reviewer	Approved by					Drafter	Reviewer	Approved by
		Signed	*signed*	*signed*					*signed*	*signed*	*signed*
	Position / Name	SW/KANG, Kwang Seok	GJ/YANG, J. H.	CJ/JEONG, S.H.		/		Position / Name	SW/LEE, Chun Mi	DL/YOON, Hyoung Jin	
	Date				Control No.			Date			
	Years in Storage	0, 1, 2, 3, 5, 10, Permanent						Years in Storage	1, 3, 5, 10, P	Security Rating	1, 2, 3, Confidential

Under the provisions of the employee's invention compensation policy, I request to proceed with the filing/registration of my invention and to assign its rights for domestic and international registrations.

Statement by Inventor

Title of the Invention	DESIGN FOR A STRUCTURE OF A META MIB (MANAGEMENT INFORMATION BASE) FOR AN NE (NETWORK ELEMENT) AGENT TO AUTOMATICALLY BUILD MIB INFORMATION IN AN NMS (NETWORK MANAGEMENT SYSTEM)
Summary of the Invention	The present invention describes a design of a meta MIB structure, which focuses mainly on maximizing network management functions, wherein said functions are to be performed quickly and accurately by receiving information of MIB from an NE agent via on-line in NMS.
Name(s) of Related Projects	
Status of the Embodiment	☐ Conception ☐ Completed Design ☒ (In, Completed) Testing ☐ (Preparing, In) Business Implementation
Publication Status of the Invention	☐ Unpublished ☐ Expected to be Published※ ☒ Published Earlier※ ※ If checked, please specify the (scheduled) date of publication and related dissertations. [(Scheduled) Date of Publication: June 29, 2002 ; Related dissertations: Design of Automatic Import System of NE MIB for Network Management at SNMP-based NMS]
Prior Art	Korean: Foreign:
Filing Term	☒ Standard ☐ Urgent → (Within days)
Reason for Urgent Filing	
Foreign Filing	☐ Yes (Reason:) ☒No
Key Word	

Statement by Patent Team

Date of Receipt	November 30, 2002	Agent	Phoenix patent office	Hyundai Syscomm Ref.	CM2002-12-0066
Korean Filing	☑ Patent ☐ Utility Model ☐ Journal of Technical Disclosure ☐ Withhold Filing (Reason:)				
	Request for Examination	☐Yes ☒ No	Strategic Patent Project for the Invention	42	
Foreign Filing	☐ Yes ☐ No		Filing Rating	B	
	Deliberation	☐ Yes ☐ No	*Remarks for Agents writing the specification*		

Designating Countries to File					
☐ Direct National Filing ☐ EPO Filing ☐ PCT Filing				☐ Domestic filing without Review ☑ Domestic filing after Patent Team Review ☐ Simultaneous Korean & Foreign Filing	
1st Priority		5th Priority			
2nd Priority		6th Priority		Reviewer's Opinion	OK
3rd Priority		7th Priority			
4th Priority		8th Priority			
Note					

Statement by Manager of Invention Team

< Evaluation of the Invention>

Category	Contents	Evaluation Grade
Technology	Simple technology	☐ 1 point
	Slightly higher technology	☐ 3 point
	Advanced technology	☒ 5 point
Possible Implementation	Theoretically possible to implement, but has no plan for testing	☐ 1 point
	Developments in related technologies are required first for testing	☐ 2 point
	Currently testing or planning to test	☐ 3 point
	Tested and obtained satisfactory results (Attach Documents)	☒ 5 point
	Preparing or currently implementing into one's business	☐ 7 point
Effects	What is the level of improvement? (Simplification of processes, yield, cost etc.)	☐ 3 ☒ 2 ☐ 1 point
Importance	Defending the rights in disclosing the technology	☐ 1 point
	Adaptable (or scheduled) for mass production	☒ 3 point
	Absolutely necessary to obtain exclusive technology	☐ 5 point
Evaluation Result		(15)Point

Note: ※ The Invention Evaluation form must be filled out by the manager of the invention team.
※ Evidence is necessary for those inventions that are rated 5 or 7 points in the section of "Possibility for Implementation."
※ The Evaluation Result should be filled in only after completing the Evaluation.

<Evaluation for Foreign Filing>

Status of products to which the invention was applied	* Applied Product: * Related Technology: * Applied Period:	* For cases applied to multiple products, list all product names. For future cases to be applied, mark the estimated period.
Evaluation	☐ Absolutely necessary ☐ Observe for a year after filing domestically ☐ Not necessary	Designation of Countries 1st Priority 2nd Priority 3rd Priority
	☐ Direct National Filing ☐ EPO Filing ☐ PCT Filing	4th Priority 5th Priority
	Technological Factor	6th Priority 7th Priority 8th Priority
	Economical Factor	Evaluator Name: Position: Signature:

Inventor Information									
Primary Inventor	Name	(Korean) 강 광 석	(S/W) Development Group (Network Development) Team						
		(Chinese) 姜 光 錫	Position	SW	Employee ID No.	H23071	Tel (7961)		
		(English) Kang Kwang Seok	Residence ID	741015-1233719					
	E-mail	ksk74@hysyscom.com	Address	#203, 881-4 Hwajeong-dong, Deokyang-gu, Goyang-si, Gyeonggi-do 412-270			Signature	*signed*	
Joint Inventor	Name	(Korean)	( ) Development Group ( ) Team						
		(Chinese)	Position		Employee ID No.		Tel ( )		
		(English)	Residence ID	-				%	
	E-mail		Address				Signature		
	Name	(Korean)	( ) Development Group ( ) Team						
		(Chinese)	Position		Employee ID No.		Tel ( )		
		(English)	Residence ID					%	
	E-mail		Address				Signature		
	Name	(Korean)	( ) Development Group ( ) Team						
		(Chinese)	Position		Employee ID No.		Tel ( )		
		(English)	Residence ID					%	
	E-mail		Address				Signature		
	Name	(Korean)	( ) Development Group ( ) Team						
		(Chinese)	Position		Employee ID No.		Tel ( )		
		(English)	Residence ID					%	
	E-mail		Address				Signature		
	Name	(Korean)	( ) Development Group ( ) Team						
		(Chinese)	Position		Employee ID No.		Tel ( )		
		(English)	Residence ID					%	
	E-mail		Address				Signature		

Note: 1. The full address and e-mail address are required.
2. Write the full name in English.

HYUNDAI SYSCOMM

발명의 명세서

1. 발명의 명칭

발명의 실질적 내용에 대해 가장 적절히 표현할수 있는 명칭을 간결하고 명확하게 기재하되 약자는 가급적 피해주시기 바람.

NMS의 자동 MIB 정보 구축을 위한 NE Agent의 Meta MIB 구조 설계

2. 발명의 상세한 설명

1)산업상의 이용분야

발명이 무엇에 관한 것이며,어느 기술분야에 적용되는지를 기재하고,타 기술 분야에서도 활용이 가능하면 그 기술분야도 기재하시기 바람.

SNMP 망관리 구조에서 NMS와 NE Agent는 서로 MIB을 Offline으로 공유하는구조이다. 이에 반해 본 발명은 NMS에서 NE Agent로부터 MIB 자체의 정보를 온라인상으로 제공받아 신속, 정확한 망 관리 기능을 발휘할 수 있도록 망 관리 기능 극대화에 초점을 둔 Meta MIB 구조 설계에 관한 것이며, 망관리 기술 분야에 적용 가능하다.

2)종래기술의 설명 및 그 문제점

*본 발명이 속하는 기술분야에서 본 발명과 연관되는 종래기술이 어떻게 실시되는지 기술적 구성이나 개요를 비교적 상세히 설명하고,그 문제를 기재하기 바람.
*본 발명과 관련된 참고문헌이나 특허공보가 있으면 문헌명이나 공보번호를 기재하고, 그 자료를 본 명세서에 첨부하시기 바람.

SNMP 망 관리 구조 모델은 전산망 관리 장비의 망 관리 시스템(NMS : Network Management System) 응용과 전산망 요소(NE : Network Element)의 수행자(Agent) 사이에서 관리 정보 교환에 의해 수행된다. MIB은 SNMP를 사용하여 NE Agent와 NMS 사이에 교환되는 관리 정보를 말한다.SMI로 정의된 MIB은 관리 객체들의 집합이라고 볼 수 있으며, 각각의 관리 객체는 그 유일한 식별자와 특성을 가진다. 각 관리 객체의 식별자는 전역적으로 유일한 값을 가지며, 관리객체의 특성은 SMI에 정의된 형식을 기준으로 구성되게 된다.

NMS와 NE Agent간의 관리 정보 항목에 대한 처리 과정을 수행하기 위해, NMS와 NE Agent는 관리 항목을 기술한 SMI규격의 MIB 정의 문서를 Offline을 통해 공유한다.(4 도면의 간단한 설명 그림1 참조) 즉, MIB은 NMS와 NE Agent 양단간에 그 의미와 형식이 사전에 공유되어야 한다. 그러나 양단간에 공유되지 않으면 NE에 대한 망관리 기능을 발휘하지 못하는 제약점이 생기게 된다. 또한 NE Agent에 새로운 MIB이 추가될경우 NMS에 추가된 MIB을 오프라인으로 알려 주어야 한다. 이것은 신속 정확한 망관리 운영에 문제가 된다.

참고문헌: [1]"SNMP, SNMPv2, and CMIP The Practical Guide to Network-Management Standards", William Stallings,
[2] RFC 1155:" Structure and Identification of Management Information for TCP/IP-based Internets" , M. Rose, K. McCloghrie, May. 1990

3)종래 문제점을 해결하기 위한 본 발명의 기술적 원리

*본 발명에서 상기와 같은 기술적 문제점을 어떻게 해결하고 있는지 그 해결책의 요지만을 기재하고, 그 상세한 설명은 다음항에 기재하기 바람.
*어떤 효과를 지닌 어떤기술을 사용하여 어떤 문제점을 해결하였다는 등

본 발명은 종래의 문제점을 극복하기 위해서 NE Agent가 가지고 있는 MIB 자체에 대하여 그 정보를 NMS로 전송하여야 한다. NMS가 NE Agent로 관리 정보를 요청하기 위해 필수적으로 필요한 정보들을 MIB의 형태로 Meta MIB 설계를 함으로써 NMS는 SNMP로 NE Agent의 Meta MIB 정보에 대한 요청으로 사전에 MIB이 공유되지 않더라도, NE Agent가 가지고 있는 MIB을 자동적으로 구성 할수 있게 된다..(4 도면의 간단한 설명 그림2 참조)

4)본 발명의 구성 및 그 전반적인 동작설명

*본 발명은 본 발명이 속하는 기술분야 또는 연관된 기술분야에 종사하는 기술자라면 누구라도 실시할수 있을 정도로 상세하고도 정확한 표현으로 기재하시기 바람.

1. NE Agent의 MIB 정보를 Meta MIB으로의 설계
1.1 SMI로 표현되는 MIB의 정형화 구조
MIB 정보를 표현하기 위한 Meta MIB으로 구조화 시키기 위해서는 NE Agent MIB을 정의하기 위한 기본 구조인 SMI를 Meta MIB으로 표현할 수 있도록 그 구조를 정형화 시켜야 한다. 이러한 정형화 과정을 위해 SMI의 구조 자체를 일반적인 MIB의 형태로 표현하고 SMI를 정형화한 MIB의 인스턴스로 NE Agent MIB의 정보들을 표현함으로써 Meta MIB을 구성한다. 이를 위해 NE Agent MIB 객체들의 공통 특성들을 표현하기 위한 baseInfoTable을 하나의 테이블로하여 NE Agent MIB 객체들의 공통 특성을 반영하는 Meta MIB 테이블를 구성한다. 그리고 objectInfoTable과 trapInfoTable을 각각 생성함으로써 OBJECT-TYPE과 TRAP-TYPE Object들을 표현하는 특성들을 반영시킨다. 그리고 Table의 연관관계와 인덱스를 표현하기 위해 sequenceInfoTable을 생성하고, INTEGER syntax의 의미를 반영하기 위한 syntaxIntegerTable을 생성한다.

1.2 MIB 정보의 Meta MIB으로의 Mapping
SMI구조로 정의된 MIB 정보를 표현하기 위한 Meta MIB의 객체중 MIB 객체가 표현하는 공통 부분에 해당하는 baseInfoTable에 대한 객체를 살펴보면 다음과 같이 매핑 되어 설계된다.
baseInfoTable의 baseInfoIndex는 테이블의 인스턴스를 구분하는 인덱스로 사용된다. baseInfoTable의 moduleName은 NE Agent MIB의 DEFINITOINS과 매핑된다. moduleName으로 NE Agent에서 사용되는 MIB의 종류를 알 수 있다. baseInfoTable의 objectName은 NE Agent MIB에 나타나는 모든 관리 객체들의 이름과 매핑된다. baseInfoTable의 objectType은 NE Agent MIB의 관리 객체들의 타입을 표현하는 것으로 여기에 해당하는 것은 OBJECT IDENTIFIER, OBJECT-TYPE, TRAP-TYPE, NOTIFICATION-TYPE 등이 있다. baseInfoTable의 objectType은 Abstract Syntax로 INTEGER를 사용하여 object-identifier(1), object-type(2), trap-type(3), notification-type(4)으로 매핑한다. baseInfoTable의 objectID는 NE Agent MIB의 관리 객체 OID와 매핑되며, Abstract Syntax로 OBJECT IDENTIFIER를 사용한다. 마지막으로 baseInfoTable의 description은 MIB 관리 객체의 DESCRIPTION 부분과 매핑된다.

4) 항에서 계속

1.3 OBJECT-TYPE 객체의 Meta MIB Mapping

NE Agent MIB에서 관리 객체가 OBJECT-TYPE으로 선언되는 객체에 대하여 Meta MIB으로 매핑하는 방법을 기술하면 다음과 같다.

Meta MIB안에서 objectInfoTable은 OBJECT-TYPE으로 표현되는 객체에 대한 특성을 반영할 수 있도록 설계되었다. ObjectInfoTable의 objectInfoEntry는 인덱스로 objectInfoIndex와 baseInfoIndex를 사용한다. objectInfoIndex는 테이블의 인스턴스를 구분하는 인덱스이고 baseInfoIndex는 baseInfoTable에서 objectType객체의 값이 object-type인 경우에 해당하는 인덱스의 값을 나타낸다. objectInfoTable의 objectBaseSyntax는 NE Agent MIB의 SYNTAX를 표현한 것으로 ASN.1의 Primitive Type인 INTEGER, OCTET STRING, OBJECT IDENTIFIER와 Constructor Type인 SEQUENCE, SEQUENCE OF가 해당되며, Abstract Syntax로 INTEGER를 사용하여 integer(1), octet_string(2), object_identifier(3), sequence_of(4), sequence(5)으로 매핑한다. objectInfoTable의 objectComposedSyntax는 NE Agent MIB의 SYNTAX가 재정의 된 경우를 매핑한다. 예를 들면 RFC1213의 특정 객체의 SYNTAX가 DisplayString 경우 OCTET STRING이 재정의 된 것이다. 이와 같이 재정의된 SYNTAX에 대해 매핑하며 재정의 되지 않은 SYNTAX는 objectBaseSyntax와 동일 하게 매핑한다. objectComposedSyntax는 Abstract Syntax로 DisplayString을 사용한다. objectInfoTable의 objectStatus는 NE Agent MIB 객체의 STATUS 종류를 나타내는 것으로 Abstract Syntax로 INTEGER를 사용하여 mandatory(1), optional(2), o NE Agent MIB 객체의 ACCESS 종류를 나타내는 것으로 Abstract Syntax로 INTEGER를 사용하여 read-only(1), read-write(2), write-only(3), not-accessible(4)로 매핑한다.

Meta MIB의 syntaxIntegerTable은 NE Agent MIB의 SYNTAX가 INTEGER일때 subtype을 매핑하기 위해 설계되었다. 설계된 객체를 살펴보면 다음과 같다. syntaxIntegerEntry는 인덱스로 syntaxIntegerInfoIndex와 baseInfoIndex를 사용한다. syntaxIntegerInfoIndex는 테이블의 인스턴스를 구분하는 인덱스이고, baseInfoIndex는 baseInfoTable에서 objectType객체의 값이 object-type이면서 objectInfoTable에서 objectBaseSyntax의 값이 integer인 객체의 인덱스 값을 표현한다. syntaxIntegerValue는 NE Agent MIB의 SYNTAX INTEGER의 subtype과 매핑된다. syntaxIntegerValueString은 NE Agent MIB의 SYNTAX INTEGER의 subtype의 표현 문자열과 일대일 매핑된다.

Meta MIB의 sequenceInfoTable은 NE Agent MIB의 SYNTAX가 SEQUENCE OF인 테이블의 경우를 매핑하기 위해 설계되었다. 인덱스로 sequenceIndex와 baseInfoIndex를 사용한다. sequenceIndex는 인스턴스를 구분하는 인덱스이다. baseInfoIndex는 objectInfoTable에서 objectBaseSyntax의 값이 sequence-of인 baseInfoIndex의 값을 나타낸다. sequenceIndexValue는 NE Agent MIB의 테이블 인덱스와 매핑되는 것으로 값은 baseInfoIndex중 NE Agent MIB의 테이블 인덱스를 나타내는 값과 일치한다. sequenceEntryInfo는 NE Agent MIB의 엔트리 인스턴스와 매핑되는 것으로 값은 baseInfoIndex중 NE Agent MIB의 엔트리 인스턴스를 나타내는 값과 일치한다.

1.4 TRAP-TYPE 객체의 Meta MIB Mapping

NE Agent MIB의 Trap 객체에 대한 Meta MIB으로의 매핑 설계 방법을 기술하면 다음과 같다.

Trap 객체 처리를 위해 trapInfoTable을 설계하였다. trapInfoTable에 기술된 인덱스는 trapInfoIndex와 baseInfoIndex이다. trapInfoIndex는 인스턴스를 구분하는 인덱스이고, baseInfoIndex는 baseInfoTable의 객체인 objectType의 값이 trap-type 이거나 notification-type인 경우의 인덱스 값을 나타낸다. trapInfoTable의 trapEnterprise 객체는 NE Agent MIB의 TRAP-TYPE 객체의 ENTERPRISE 값과 매핑되며, TRAP-TYPE이 아니라 NOTIFICATION-TYPE일 경우는 NULL 값으로 매핑한다. trapInfoTable의 trapVariable 객체는 NE Agent MIB에서 TRAP-TYPE 객체의 VARIABLES 값과 매핑되며, NOTIFICATION-TYPE일 경우는 OBJECTS의 값을 매핑 한다.

1.5 Meta MIB의 정의

다음과 같이 Meta MIB을 정의하였다.

4) 항에서 계속

```
MibInfo-MIB DEFINITIONS ::= BEGIN

IMPORTS
        mgmt, NetworkAddress, IpAddress, Counter, Gauge, Integer32,
                TimeTicks, enterprises
            FROM RFC1155-SMI
        OBJECT-TYPE
                FROM RFC-1212
  DisplayString FROM RFC1213-MIB;

--
--
--

mibInfo      OBJECT IDENTIFIER ::= { enterprises 7961 }

baseInfo     OBJECT IDENTIFIER ::= { mibInfo 1 }

syntaxInfo   OBJECT IDENTIFIER ::= { mibInfo 2 }


 baseInfoTable OBJECT-TYPE
SYNTAX  SEQUENCE OF BaseInfoEntry
ACCESS not-accessible
STATUS mandatory
DESCRIPTION
  " This Table is for MIB Object base information."
::= { baseInfo 1 }

 baseInfoEntry OBJECT-TYPE
SYNTAX BaseInfoEntry
ACCESS not-accessible
STATUS mandatory
DESCRIPTION
  ""
INDEX { baseInfoIndex }
::= { baseInfoTable 1 }

 BaseInfoEntry ::=
SEQUENCE {
 baseInfoIndex
  INTEGER,
 moduleName
  DisplayString,
 objectName
  DisplayString,
 objectType
  INTEGER,
 objectID
  OBJECT IDENTIFIER,
```

4) 항에서 계속

```
 description
  DisplayString
}

 baseInfoIndex OBJECT-TYPE
SYNTAX INTEGER (0..2147483647)
ACCESS read-only
STATUS mandatory
DESCRIPTION
  " baseInfoIndex distinguish each object"
::= { baseInfoEntry 1 }

 moduleName OBJECT-TYPE
SYNTAX  DisplayString
ACCESS read-only
STATUS mandatory
DESCRIPTION
  " Module Name of MIB File"
::= { baseInfoEntry 2 }

 objectName OBJECT-TYPE
SYNTAX DisplayString
ACCESS read-only
STATUS mandatory
DESCRIPTION
  " Object Name"
::= { baseInfoEntry 3 }

 objectType OBJECT-TYPE
SYNTAX INTEGER {
 object-type(1),
 object-identifier(2),
 trap-type(3),
 notification-type(4)
 }
ACCESS read-only
STATUS mandatory
DESCRIPTION
  "Object type of each object"
::= { baseInfoEntry 4 }

 objectID OBJECT-TYPE
SYNTAX OBJECT IDENTIFIER
ACCESS read-only
STATUS mandatory
DESCRIPTION
  "Object identifier of MIB object"
::= { baseInfoEntry 5 }
```

4) 항에서 계속

```
description OBJECT-TYPE
SYNTAX DisplayString
ACCESS read-only
STATUS mandatory
DESCRIPTION
  "Description of MIB object"
::= { baseInfoEntry 6 }

 objectInfoTable OBJECT-TYPE
SYNTAX SEQUENCE OF ObjectInfoEntry
ACCESS read-only
STATUS mandatory
DESCRIPTION
  ""
::= { baseInfo 2 }

 objectInfoEntry OBJECT-TYPE
SYNTAX ObjectInfoEntry
ACCESS not-accessible
STATUS mandatory
DESCRIPTION
  ""
INDEX { baseInfoIndex }
::= { objectInfoTable 1 }

 ObjectInfoEntry ::=
SEQUENCE {
 objectInfoIndex
  INTEGER,
 objectBaseInfoIndexValue
  INTEGER,
 objectBaseSyntax
  INTEGER,
 objectComposedSyntax
  DisplayString,
 objectStatus
  INTEGER,
 objectAccess
  INTEGER
}

 objectInfoIndex OBJECT-TYPE
SYNTAX INTEGER (0..2147483647)
ACCESS read-only
STATUS mandatory
DESCRIPTION
  ""
::= { objectInfoEntry 1 }
```

4) 항에서 계속

```
objectBaseInfoIndexValue OBJECT-TYPE
SYNTAX INTEGER (0..2147483647)
ACCESS read-only
STATUS mandatory
DESCRIPTION
  ""
::= { objectInfoEntry 2 }

 objectBaseSyntax OBJECT-TYPE
SYNTAX INTEGER (0..2147483647)
ACCESS  read-only
STATUS mandatory
DESCRIPTION
  ""
::= { objectInfoEntry 3 }

 objectComposedSyntax OBJECT-TYPE
SYNTAX DisplayString
ACCESS read-only
STATUS mandatoryB4
DESCRIPTION
  ""
::=  { objectInfoEntry 4 }

 objectStatus OBJECT-TYPE
SYNTAX INTEGER {
  current(1),
  deprecated(2),
  obsolete(3),
  mandatory(4),
  optional(5)
  }

ACCESS read-only
STATUS mandatory
DESCRIPTION
  ""
::= { objectInfoEntry 5 }

 objectAccess OBJECT-TYPE
SYNTAX INTEGER {
  not-accessible(1),
  accessible-for-notify(2),
  read-only(3),
  read-write(4),
  read-create(5)
  }
ACCESS read-only
STATUS mandatory
DESCRIPTION
  ""
```

4) 항에서 계속

```
::= { objectInfoEntry 6 }

 trapInfoTable OBJECT-TYPE
SYNTAX SEQUENCE OF TrapInfoEntry
ACCESS not-accessible
STATUS mandatory
DESCRIPTION
  ""
::= { baseInfo 3 }

 trapInfoEntry OBJECT-TYPE
SYNTAX TrapInfoEntry
ACCESS not-accessible
STATUS mandatory
DESCRIPTION
  ""
::= { trapInfoTable 1 }

 TrapInfoEntry ::=
SEQUENCE {
 trapInfoIndex
  INTEGER,
 trapBaseInfoIndexValue
  INTEGER,
 trapEnterprise
  OBJECT IDENTIFIER,
 trapVariable
  DisplayString
}

 trapInfoIndex OBJECT-TYPE
SYNTAX INTEGER (0..2147483647)
ACCESS read-only
STATUS mandatory
DESCRIPTION
  ""
::= { trapInfoEntry 1 }

 trapBaseInfoIndexValue OBJECT-TYPE
SYNTAX INTEGER (0..2147483647)
ACCESS read-only
STATUS mandatory
DESCRIPTION
  ""
::= { trapInfoEntry 2 }

 trapEnterprise OBJECT-TYPE
SYNTAX OBJECT IDENTIFIER
ACCESS read-only
STATUS mandatory
```

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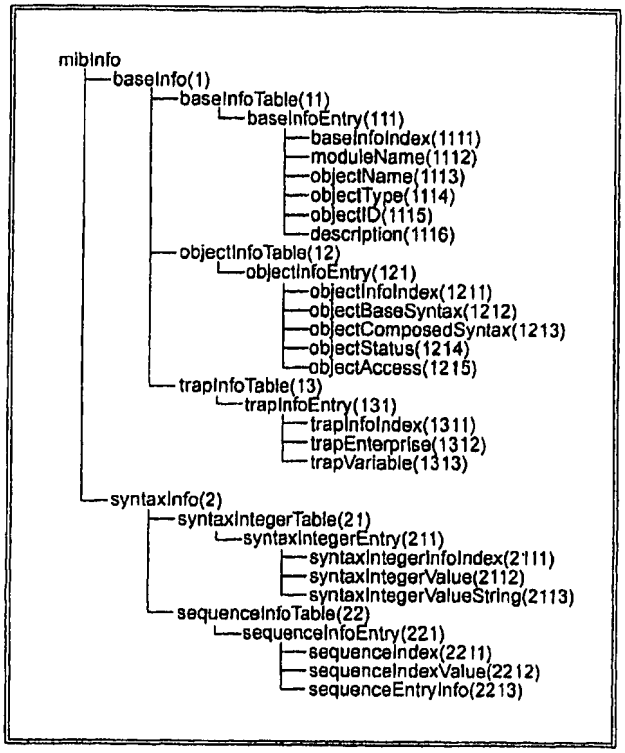
[Continued on next page]

(54) Title: STRUCTURE OF A MANAGEMENT INFORMATION BASE COMMUNICATED BETWEEN A NETWORK MANAGEMENT SYSTEM AND AN AGENT OF A NETWORK ELEMENT



(57) Abstract: The present invention relates to a structure of a Management Information Base (MIB) communicated between a Network Management System (NMS) and an agent of a Network Element (NE). Conventionally, an operator provides the MIB to the NMS and the NE agent before the communication. If the MIB is not provided before the communication, the NMS cannot know what data to be retrieved from the NE agent and thus cannot understand the MIB. In order to resolve this problem, the present invention suggests using the claimed structure of MIB for communicating between the NMS and the NE agent. According to the present invention, when a MIB of the NE agent is changed, the MIB of the NE agent is reflected to the NMS automatically, and not by an operator's action. Therefore, the network can be managed automatically.

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STRUCTURE OF A MANAGEMENT INFORMATION BASE COMMUNICATED BETWEEN A NETWORK MANAGEMENT SYSTEM AND AN AGENT OF A NETWORK ELEMENT

TECHNICAL FIELD

The present invention generally relates to a meta structure of a Management Information Base (MIB) of a Network Element (NE) agent for automatically constructing MIB information in a Network Management System (NMS), and more particularly to a meta structure of a MIB that allows a NMS to receive MIB information online from an agent to perform quick and correct network management in Simple Network Management Protocol (SNMP) network management architecture.

BACKGROUND ART

Generally, a SNMP is a protocol for managing a network and monitoring and supervising network devices. Further, a SNMP allows a remote user to logically examine and change management information for network elements. A Structure of Management Information (SMI) (which describes the structure of management information of the SNMP), a MIB (which is definitive for management information) and a SNMP (which is a communication protocol) are standard components for managing a network based on a TCP/IP. These provide structures and functions operable for an Internet network management.

A SNMP network management structure model is executed by exchanging management information between a NMS application of a network management equipment and an agent of an NE.

In order to process management information items between a NMS and a NE agent, a NMS and a NE agent offline share a MIB definition document of SMI standard describing management items. However, when the MIB is not shared between a NMS and a NE agent, a problem may occur in that the NMS does not properly manage the NE.

Network management is focused such that a NMS receives a MIB of a NE from a NE agent online to perform speedy and correct network management.

A SNMP is a standardized protocol for managing a network in the Internet and its latest version is version-3. A conventional structure of network management using a SNMP comprises one NMS and one or more NE agents.

The NE agents are incorporated in various network elements managed in a

network, directly accesses information generated by network elements and transmit to a NMS the information in a format matching with a SNMP. A SNMP, a SMI and a MIB, which are standard components for managing an Internet network, is basically defined by Abstract Syntax Notation.1 (ASN.1). Encoding and decoding them are performed according to a Basic Encoding Rule (BER), which is an ASN.1 manner.

Also, the SNMP supports operations such as Get-Request, GetNext-Request, Set-Request, Response, Trap and so on, in which management information is exchanged between a manager and an agent.

In a conventional network management using a SNMP, a MIB means management information is communicated between a NE agent and a NMS by using a SNMP. Accordingly, the MIB is beforehand shared between a NMS and a NE agent. Since the MIB is defined according to a SMI format, the MIB defined by SMI can be considered as a set of management objects, where each management object has a unique identifier and properties.

The identifier of each management object has a unique value and its properties are configured on the basis of the format defined in SMI. As shown in Fig. 1, a general structure using a SNMP has a MIB sharing structure, where the MIB must be provided to a NMS and a NE agent, while an operator generally performs theses tasks.

However, a MIB must be shared beforehand to update a MIB in a conventional network management using a SNMP. Otherwise, the NMS does not know which kind of object information to retrieve. Even though the NMS may retrieve the specific information, it cannot understand the meanings thereof.

DISCLOSURE OF THE INVENTION

Thus, the present invention is provided in order to solve the above-described problems associated with the prior art. The objective of the present invention is to provide a meta structure of a MIB of a NE agent for automatically constructing MIB information in a NMS so that the correct MIB information of an agent can be automatically maintained without a user judging whether the MIB information has changed in case that the agent's MIB information has changed.

Therefore, in order to achieve the above objective, a structure of a MIB, which is communicated between a NMS and an agent of an NE according to the present invention, comprises a baseInfo for creating an objectInfoTable for

describing object-type objects, a trapInfoTable for describing trap-type objects, a baseInfoTable for describing common properties of MIB objects, and a syntaxInfo for creating a syntaxIntegerTable and a sequenceInfoTable.

BRIEF DESCRIPTION OF DRAWINGS

Understanding that these drawings depict only typical embodiments of the invention and are, therefore, not to be considered limiting of its scope, the invention will be described with additional specificity and detail through use of the accompanying drawings in which:

Fig. 1 illustrates a block diagram showing the configuration of a conventional HANS-5 switch router.

Fig. 2 illustrates the configuration of a NE agent for automatically constructing MIB information in a NMS in accordance with an embodiment of the present invention.

Fig. 3 illustrates a meta MIB structure of a NE agent for automatically constructing MIB information in a NMS in accordance with an embodiment of the present invention.

BEST MODE FOR CARRYING OUT THE INVENTION

It will be readily understood that the components and steps of the present invention, as generally described and illustrated in the Figures herein and accompanying text, could be arranged and designed in a wide variety of different configurations while still utilizing the inventive concept. Thus, the following detailed description of the preferred embodiments of the structure of the present invention, as represented in Figures 1 through 3 and accompanying text, is not intended to limit the scope of the invention, as claimed. It is merely representative of the presently preferred embodiments of the invention. The presently preferred embodiments of the invention will be best understood by reference to the drawings.

Fig. 3 illustrates a meta MIB structure of a NE agent for automatically constructing MIB information in a NMS in accordance with an embodiment of the present invention. A meta MIB structure in accordance with one embodiment of the present invention comprises baseInfo 1 and syntaxInfo 2.

First, referring to the meta MIB structure, baseInfo 1 functions to create objectInfoTable 12 (which describes object-type objects) and trapInfoTable 13 (which describes trap-type objects) concurrently with creating baseInfoTable 11

reflecting common properties of MIB objects.

BaseInfoTable 11 comprises: baseInfoEntry 111, which includes baseInfoIndex 1111 distinguishing instances of tables; moduleName 1112; objectName 1113 mapped to names of all the management objects in a MIB for agent 200; objectType 1114 describing types of management objects in a MIB for agent 200 mapped to a notification type; objectID mapped to OIDs of management objects in a MIB for agent 200; and description 1116 mapped to MIB management objects in a MIB.

ObjectInfoTable 12 comprises: objectInfoEntry 121, which includes objectInfoIndex 1211 distinguishing instances of tables; objectBaseSyntax 1212 describing syntax of a MIB for agent 200 and having Integer (Integer, Octet, String, Object Identifier) which is an initial type of ASN.1, and Sequence and Sequence Of which are composed types; objectComposedSyntax 1213 using display strings for abstract syntaxes; objectStatus 1214 describing status kinds of MIB objects for agent 200 and mapped to Mandatory, Optional and Obsolete, etc. by using integers as abstract; and objectAccess 1215 describing the kind of access of MIB objects for agent 200 and mapped to Read, Read/Write, Write, Access-Deny by using integers as abstract syntaxes.

TrapInfoTable 13 comprises: trapInfoEntry 131, which includes trapInfoIndex 1311 distinguishing instances; trapEnterprise 1312 mapped to enterprise values of track-type objects in a MIB for agent 200 and mapped to a NULL value if a notification type; and trapVariable 1313 mapped to variable values of trap type objects in a MIB for agent 200 and mapping target values if a notification type.

SyntaxInfo 2 functions to create syntaxIntegerTable 21 and sequenceInfoTable 22.

SyntaxIegeterTable 21 comprises: syntaxIntegerEntry 211, which includes syntaxIntegerInfoIndex 2111 distinguishing instances of tables in a MIB for agent 200; syntaxIntegerValue 2112 mapped to a sub-type of Integer of a MIB for agent 200; and syntaxIntegerValueString 2113 one-to-one mapping strings to expression of a sub-type of syntax Integer of a MIB for agent 200.

SequenceInfoTable 22 comprises: sequenceInfoEntry 221, which includes sequenceIndex 2211 distinguishing instances; sequenceIndexValue 2212 mapped to table indexes of a MIB for agent 200 and whose values are equal to a value indicating table indexes of a MIB for agent 200 among baseInfoIndex 1111; and

sequenceEntryInfo 2213 mapped to entry instances of a MIB for agent 200 and whose values are equal to values indicating entry instances of a MIB for agent 200 among baseInfoIndex 1111.

INDUSTRIAL APPLICABILITY

According to a meta structure of a MIB of a NE agent for automatically constructing MIB information in a NMS in accordance with the present invention, a MIB between a NMS and a NE agent can be shared online rather than offline.

CLAIMS

1. A structure of a Management Information Base (MIB) communicated between a Network Management System (NMS) and an agent of a Network Element (NE), the structure comprising:

a baseInfo for creating an objectInfoTable for describing object-type objects, a trapInfoTable for describing trap-type objects, and a baseInfoTable for describing common properties of MIB objects; and

a syntaxInfo for creating a syntaxIntegerTable and a sequenceInfoTable.

2. The structure of Claim 1, wherein the baseInfoTable comprises: baseInfoEntry, which includes a baseInfoIndex distinguishing instances of tables; a moduleName; an objectName mapped to names of all the management objects in a MIB for agent; an objectType describing types of management objects in a MIB for agent mapped to a notification type; an objectID mapped to OIDs of management objects in a MIB for agent; and a description mapped to MIB management objects in a MIB.

3. The structure of Claim 1, wherein the objectInfoTable comprises: objectInfoEntry, which includes an objectInfoIndex distinguishing instances of tables; an objectBaseSyntax describing syntax of a MIB for agent and having Integer (Integer, Octet, String, Object Identifier) which is a initial type of ASN.1, and Sequence and Sequence Of which are composed types; an objectComposedSyntax using display strings for abstract syntaxes; and objectStatus describing status kinds of MIB objects for agent and mapped to Mandatory, Optional and Obsolete, etc. by using integers as abstract; and objectAccess describing the kind of access of MIB objects for agent and mapped to Read, Read/Write, Write, Access-Deny by using integers as abstract syntaxes.

4. The structure of Claim 1, wherein the trapInfoTable comprises: trapInfoEntry, which includes a trapInfoIndex distinguishing instances; a trapEnterprise mapped to enterprise values of track-type objects in a MIB for agent and mapped to a NULL value if a notification type; and a trapVariable mapped to variable values of trap type objects in a MIB for agent and mapping target values if a notification type.

5. The structure of Claim 1, wherein the syntaxIegeterTable comprises: a syntaxIntegerEntry, which includes a syntaxIntegerInfoIndex distinguishing instances of tables in a MIB for agent; a syntaxIntegerValue mapped to a sub-type of Integer of a MIB for agent; and a syntaxIntegerValueString one-to-one mapping strings to expression of a sub-type of syntax Integer of a MIB for agent.

6. The structure of Claim 1, wherein the sequenceInfoTable comprises: a sequenceInfoEntry, which includes a sequenceIndex distinguishing instances; a sequenceIndexValue mapped to table indexes of a MIB for agent and whose values are equal to a value indicating table indexes of a MIB for agent among the baseInfoIndex; and a sequenceEntryInfo mapped to entry instances of a MIB for agent and whose values are equal to values indicating entry instances of a MIB for agent among the baseInfoIndex.

WO 2005/069665 PCT/KR2005/000141

Fig. 1

(Prior Art)

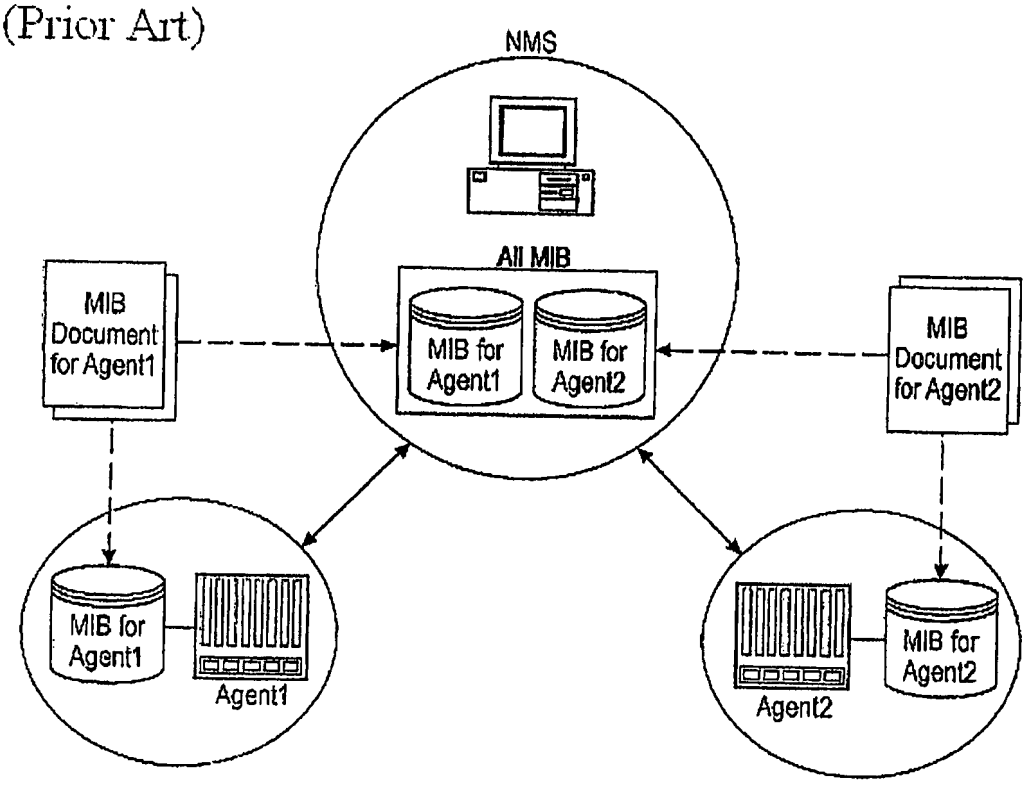
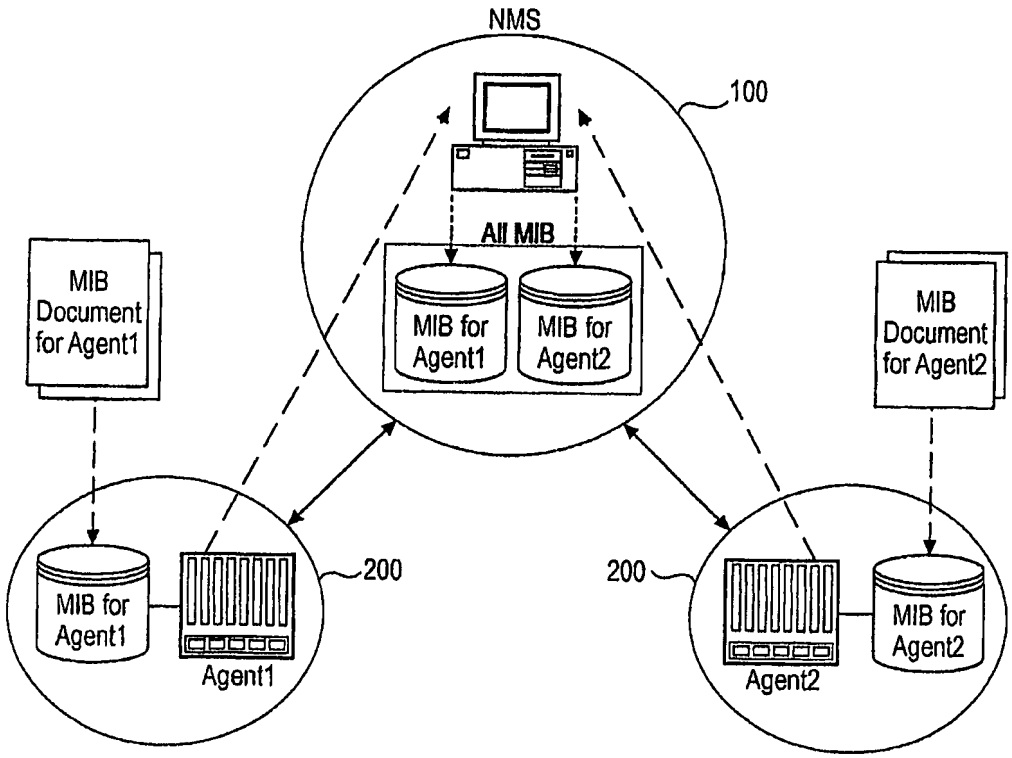


Fig. 2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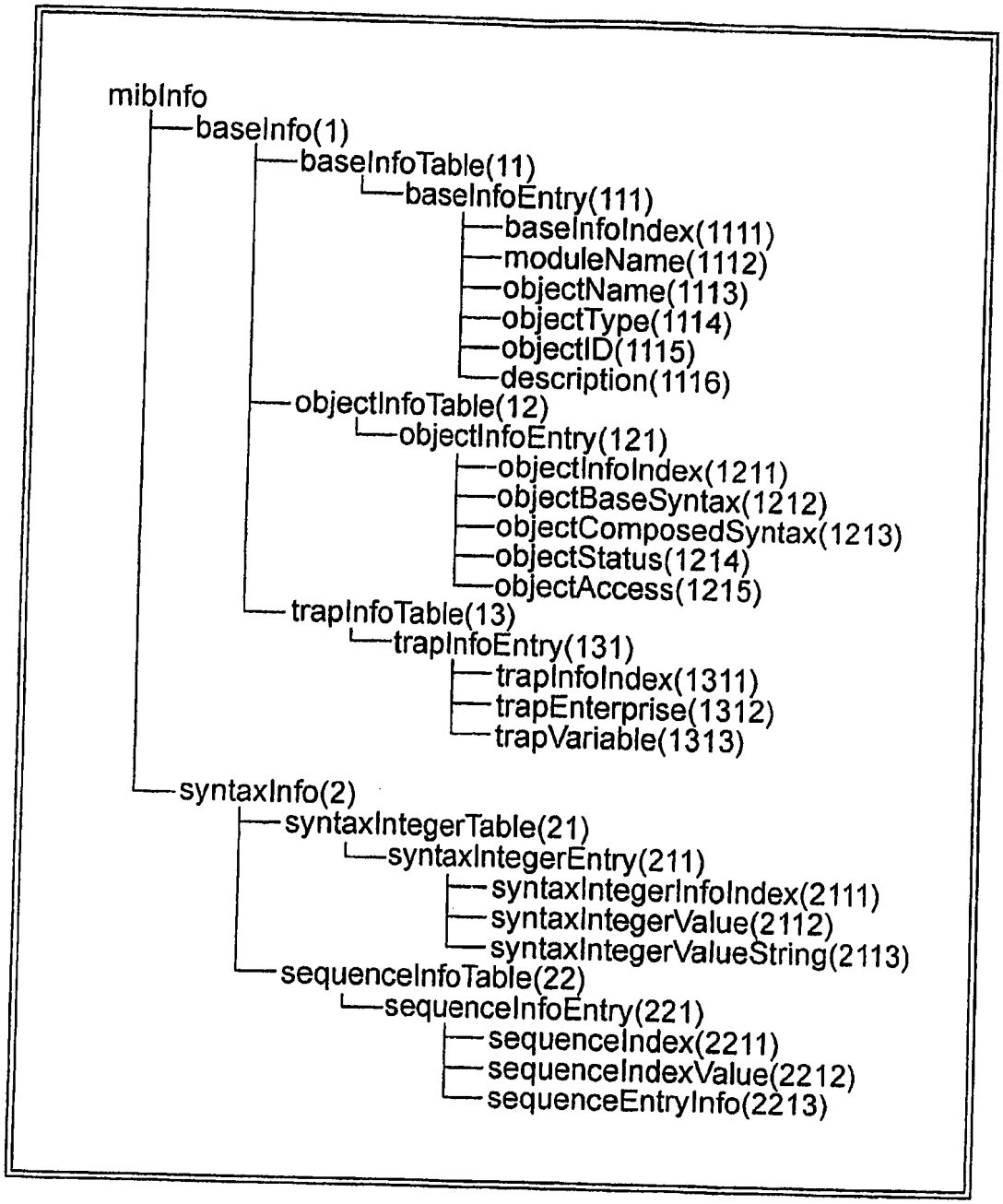
MIB for Agent2

Fig. 3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sequenceIndexValue(2212)
sequenceEntryInfo(2213)

DECLARATION AND POWER OF ATTORNEY FOR PATENT APPLICATION

As a below named inventor, I hereby declare that:
My residence, post office address and citizenship are as stated below next to my name.

I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled:

STRUCTURE OF A MANAGEMENT INFORMATION BASE COMMUNICATED BETWEEN A NETWORK MANAGEMENT SYSTEM AND AN AGENT OF A NETWORK ELEMENT

the specification of which is attached hereto unless the following space is checked:

☒ was filed on July 12, 2006 as United States Application Serial Number 10/585,838

I hereby state that I have reviewed and understand the contents of the above-identified specification, including the claims, as amended by any amendment referred to above.

I acknowledge the duty to disclose information which is material to patentability as defined in 37 CFR § 1.56 (including for continuation-in-part applications, material information which became available between the filing date of the prior application and the national or PCT international filing date of the continuation-in-part application).

I hereby claim foreign priority benefits under 35 U.S.C. § 119(a)-(d) or § 365(b) of any foreign application(s) for patent or inventor's certificate, or § 365(a) of any PCT international application which designated at least one country other than the United States, listed below and have also identified below, by checking the box, any foreign application for patent or inventor's certificate, or PCT international application having a filing date before that of the application on which priority is claimed.

Prior Foreign Application(s):

	Number	Country	Day/Month/Year Filed
1.	PCT/KR2005/000141	PCT	14 January 2005
2.	10-2004-0002983	Korea	15 January 2004

I hereby appoint the practitioners associated with the Customer Number provided below to prosecute this application and to transact all business in the Patent and Trademark Office connected therewith, and I direct that all correspondence be addressed to that Customer Number.

Customer Number: **020306**
Principal attorney or agent: Robert J. Irvine, III
Telephone number: 312-913-0001

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

McDONNELL BOEHNEN
HULBERT & BERGHOFF LLP
300 SOUTH WACKER DRIVE
CHICAGO, ILLINOIS 60606
TELEPHONE (312) 913-0001

Full name of first inventor: Kwang Seok KANG

Inventor's signature: _____ Date: _____

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Citizenship: Republic of Korea

Post Office Address: #203, 881-4 Hwajeong-dong, Deokyang-gu, Goyang-si, Gyeonggi-do 412-270 Republic of Korea

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TELEPHONE (312) 913-0001

ASSIGNMENT

Case No.: 05-518-B
Inventor: **Kwang Seok KANG**
Date of Execution
of Application:

Serial No.: 10/585,838

Filing Date: July 12, 2006

In consideration of One Dollar ($1.00) and other good and valuable considerations in hand paid, the receipt and sufficiency whereof are hereby acknowledged, the undersigned hereby assigns to:

UTSTARCOM KOREA LIMITED

its successors and assigns, the entire right, title and interest in the invention or improvements of the undersigned disclosed in an application for Letters Patent of the United States, entitled:

STRUCTURE OF A MANAGEMENT INFORMATION BASE COMMUNICATED BETWEEN A NETWORK MANAGEMENT SYSTEM AND AN AGENT OF A NETWORK ELEMENT

and identified as:

Case No. 05-518-B

in the offices of McDONNELL BOEHNEN HULBERT & BERGHOFF LLP and in said application and any and all other applications, both United States and foreign, which the undersigned may file, either solely or jointly with others, on said invention or improvements, and in any and all Letters Patent of the United States and foreign countries, which may be obtained on any of said applications, and in any reissue or extension of such patents, and further assigns to said assignee the priority right provided by the International Convention.

The undersigned hereby authorizes and requests the Commissioner of Patents and Trademarks to issue said Letters Patent to said assignee.

The undersigned hereby authorizes and requests the attorneys of record in said application to insert in this assignment the filing date and serial number of said application when officially known, and the date of execution of the application.

The undersigned warrants himself to be the owner of the entire right, title and interest in said invention or improvements and to have the right to make this assignment, and further warrants that there are no outstanding prior assignments, licenses, or other encumbrances on the interest herein assigned.

For said considerations the undersigned hereby agrees, upon the request and at the expense of said assignee, its successors and assigns, to execute any and all divisional, continuation and substitute applications for said invention or improvements, and any necessary oath, affidavit or declaration relating thereto, and any application for the reissue or extension of any Letters Patent that may be granted upon said application, and any and all applications and other documents for Letters Patent in foreign countries on said invention or improvements, that said assignee, its successors or assigns may deem necessary or expedient, and for the said considerations the undersigned authorizes said assignee to apply for patents for

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said invention or improvements in its own name in such countries where such procedure is proper and further agrees, upon the request of said assignee, its successors and assigns, to cooperate to the best of the ability of the undersigned with said assignee, its successors and assigns, in any proceedings or transactions involving such applications or patents, including the preparation and execution of preliminary statements, giving and producing evidence, and performing any and all other acts necessary to obtain, maintain and enforce said Letters Patent, both United States and foreign, and vest all rights therein hereby conveyed in the assignee, its successors and assigns, whereby said Letters Patent will be held and enjoyed by the said assignee, its successors and assigns, to the full end of the term for which said Letters Patent will be granted, as fully and entirely as the same would have been held and enjoyed by the undersigned if this assignment had not been made.

WITNESS my hand and seal this _____ day of _____, _____.

_____
Kwang Seok KANG

State of _____

County of _____

The foregoing instrument was acknowledged before me this _____ day of

_____, _____ by _____.

_____
NOTARY PUBLIC

McDONNELL BOEHNEN
HULBERT & BERGHOFF LLP
300 SOUTH WACKER DRIVE
CHICAGO, ILLINOIS 60606
TELEPHONE (312) 913-0001

EXHIBIT 4

[Translation]

From Kim & Chang
To Mr. Kwang Seok KANG
#203, 881-4 Hwajeong-dong, Deokyang-gu, Goyang-si, Gyeonggi-do 412-270, Republic of Korea

[Mail Return Notice by Post Office]
☑ delivery date: 2007-03-09

[Reason for Return]
☑ **Recipient not present/Door Closed** ☐ Recipient has moved ☐ Recipient refused to accept package ☐ Incorrect address ☐ Recipient does not reside at indicated address

156

경기도 고양시 덕양구 화정동 881-4 203호

강 광 석 님 귀하

412-270

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2007/03/02 412-270
11002-07891071 광학문
등기

반송
2007. 03. 07.
고양덕양

접 배 담 당
T.031)928-2012
강 신 일
(2)회 배달
기타의견:

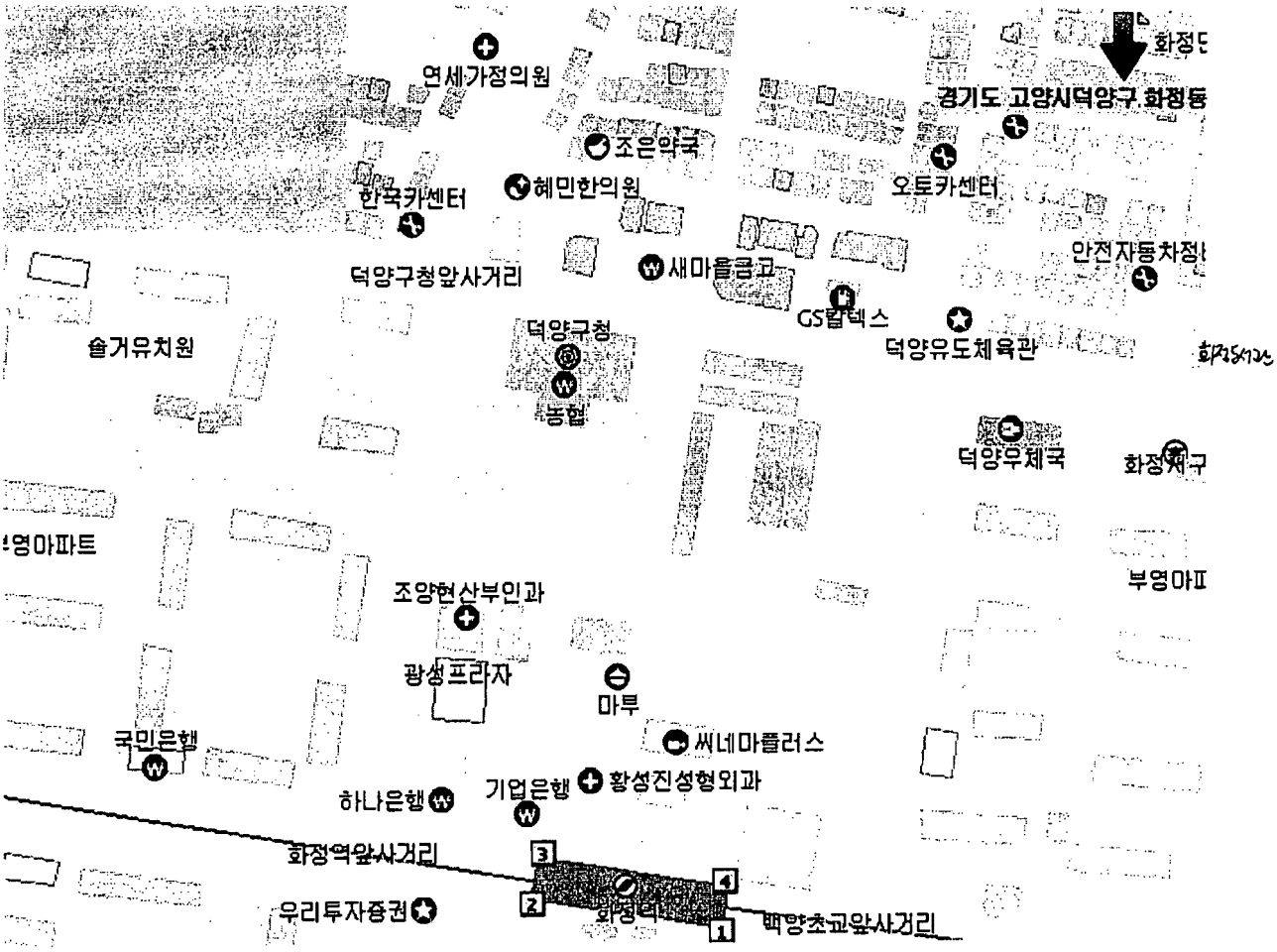
보관기
3 월 9

반송

US 10/585,838
DOC.4

EXHIBIT 5

881-4, 2c3E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새마을금고
덕양구청
농협
솔거유치원
GS칼텍스
덕양유도체육관
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화정역
백양초교앞사거리
오토카센터
경기도 고양시덕양구 화정동
안전자동차정
화정체구
부영아파트
부영아파

EXHIBIT 6

(1) Search from http://local.paran.com/tel/
Phone number search: keywords "KANG, KWANG SEOK in Korean" & "Hwajeong-dong, Deokyang-gu, Goyang-si, Gyeonggi-do, partial address in Korean"

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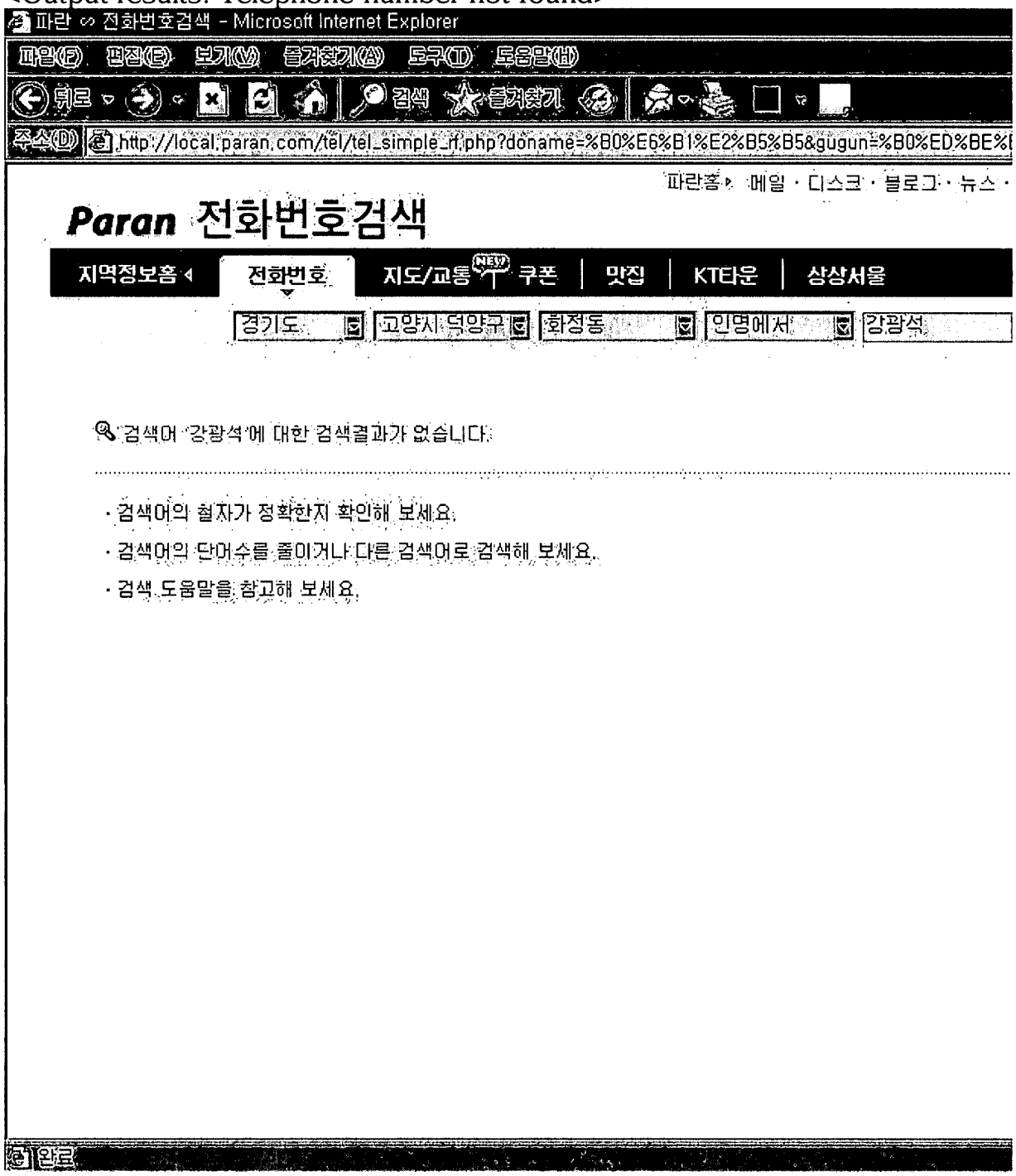

2007 - 04 - 18

(2) Search from www.yahoo.co.kr
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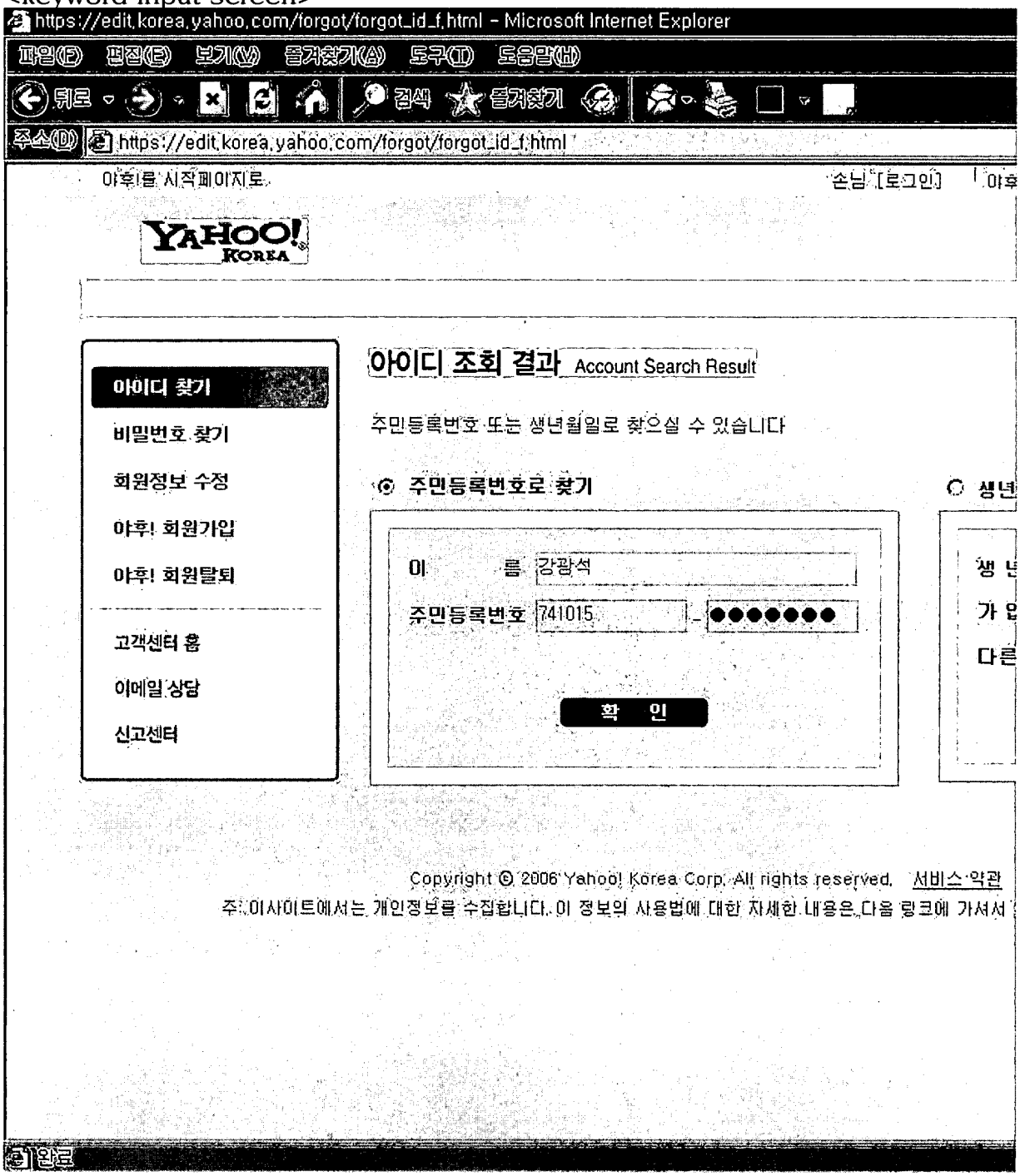

2007-04-18

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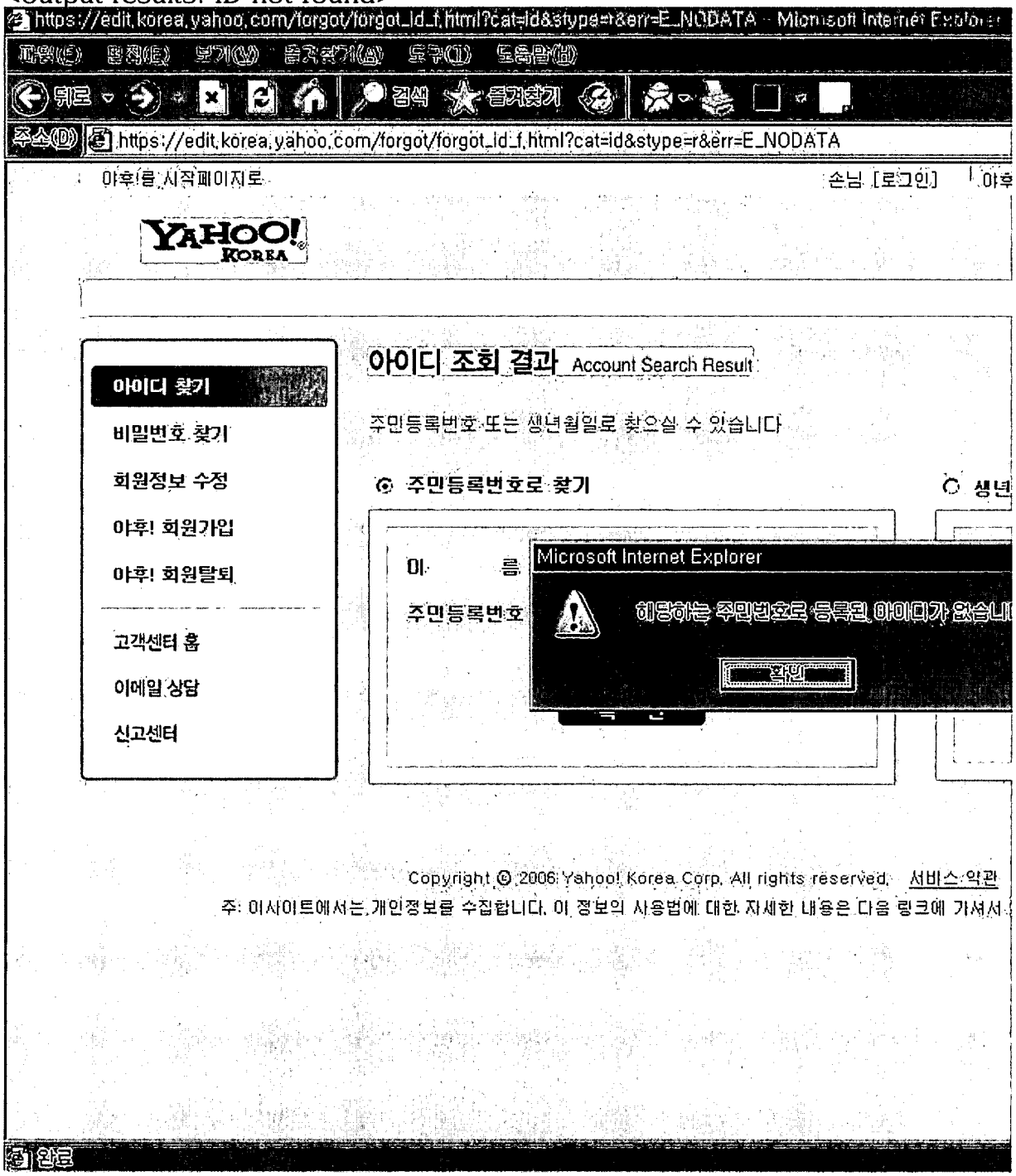

2007 - 04 - 18

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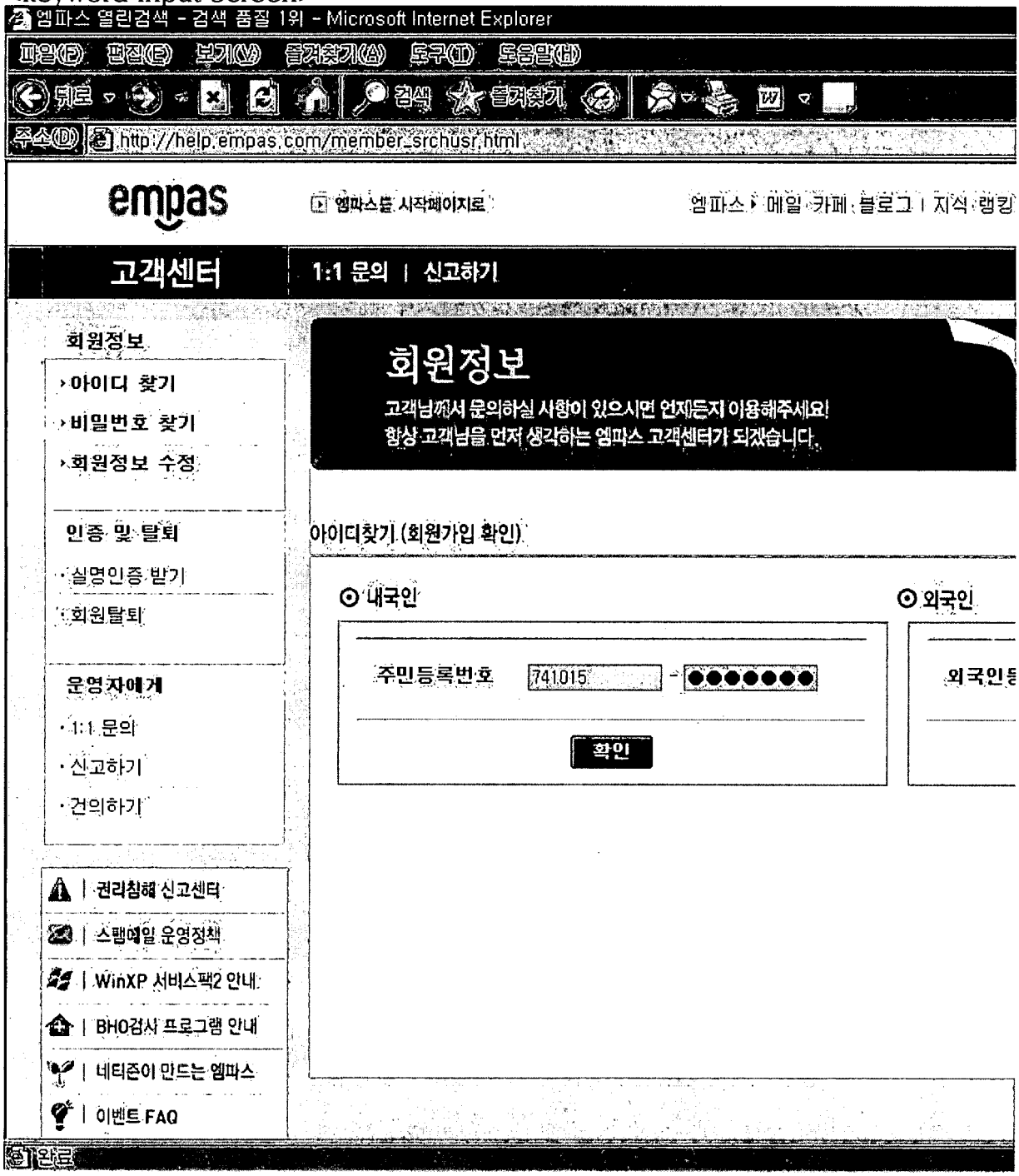

2007-04-18

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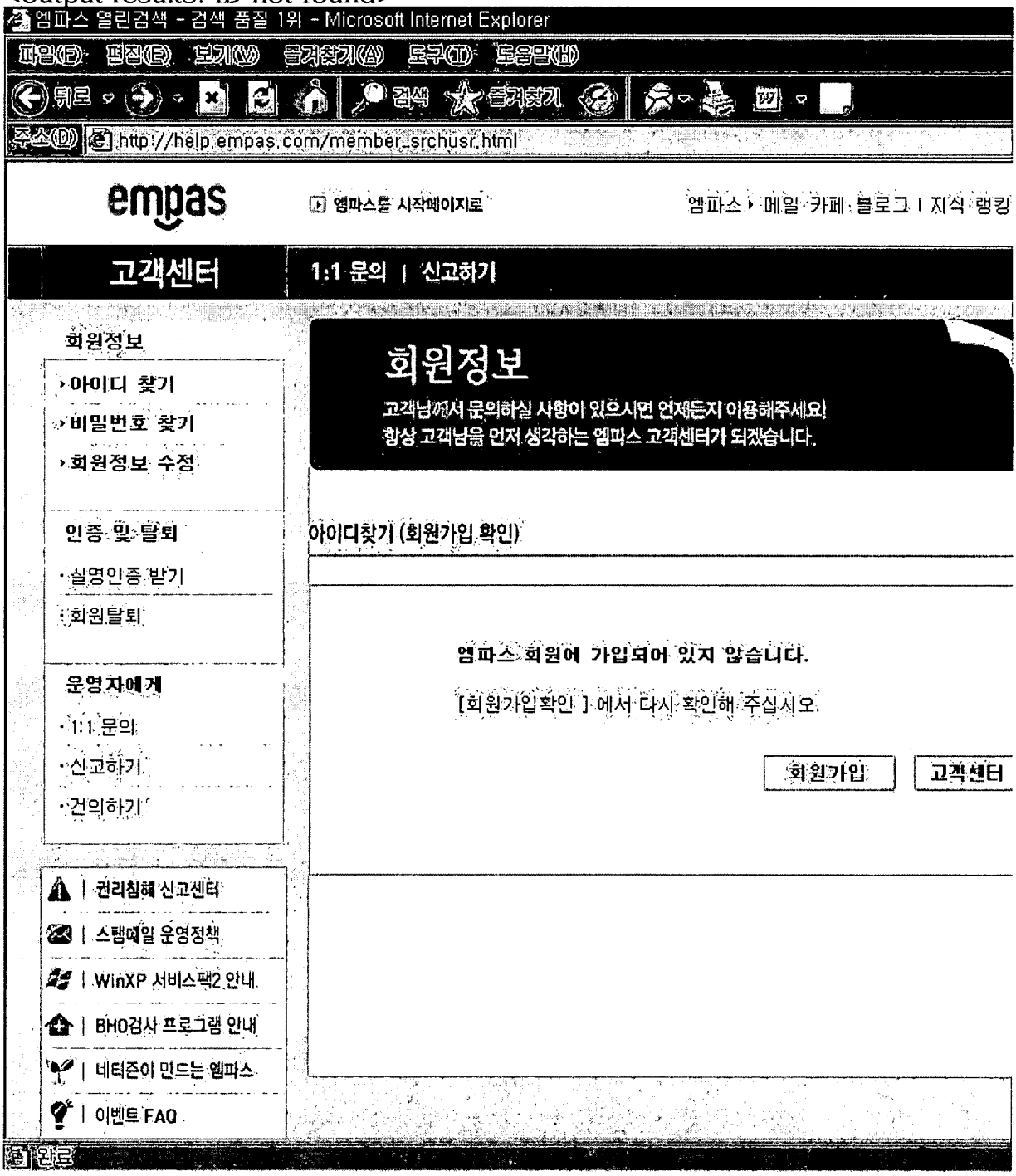

2007 - 04 - 18

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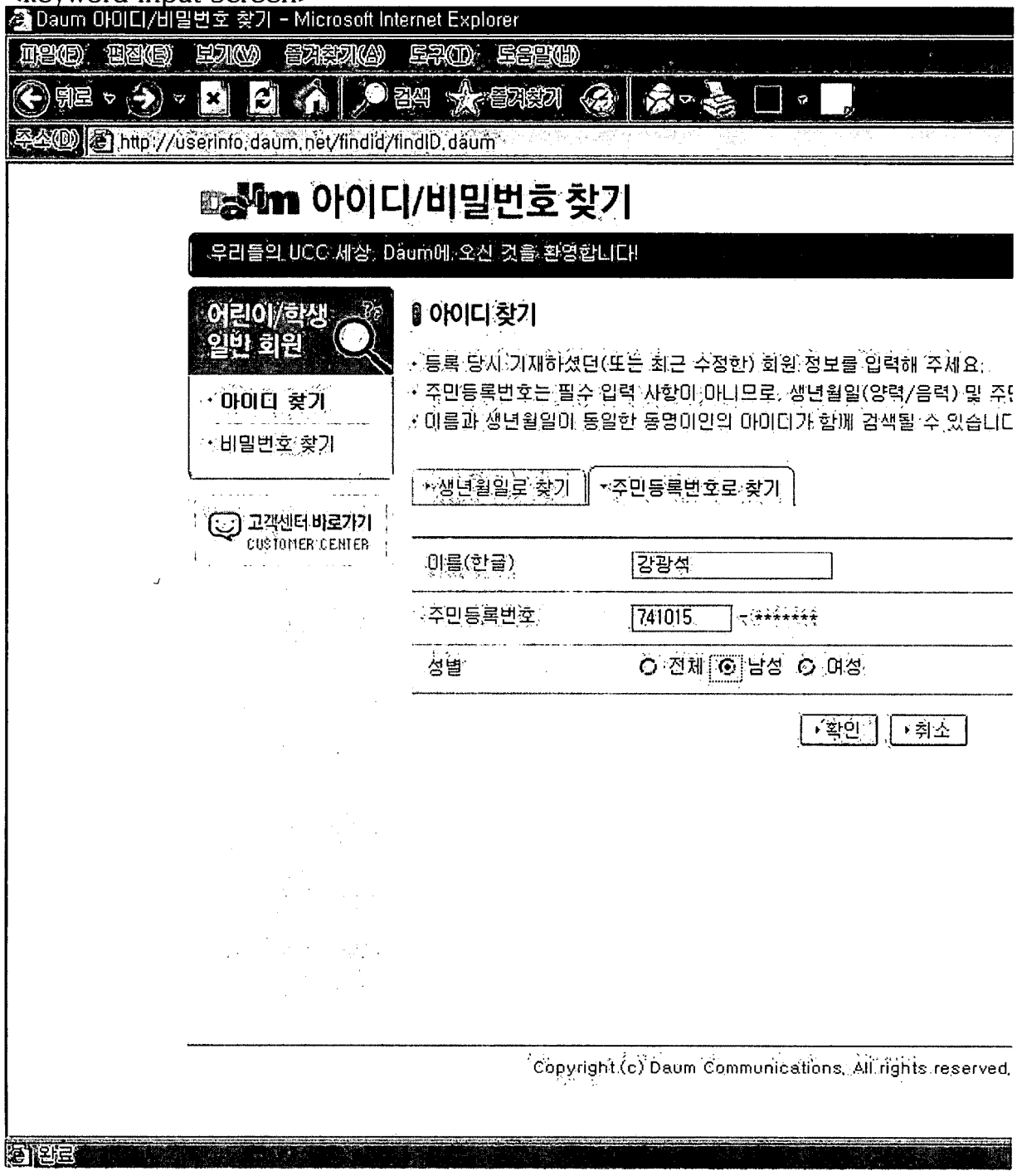

2007-04-18

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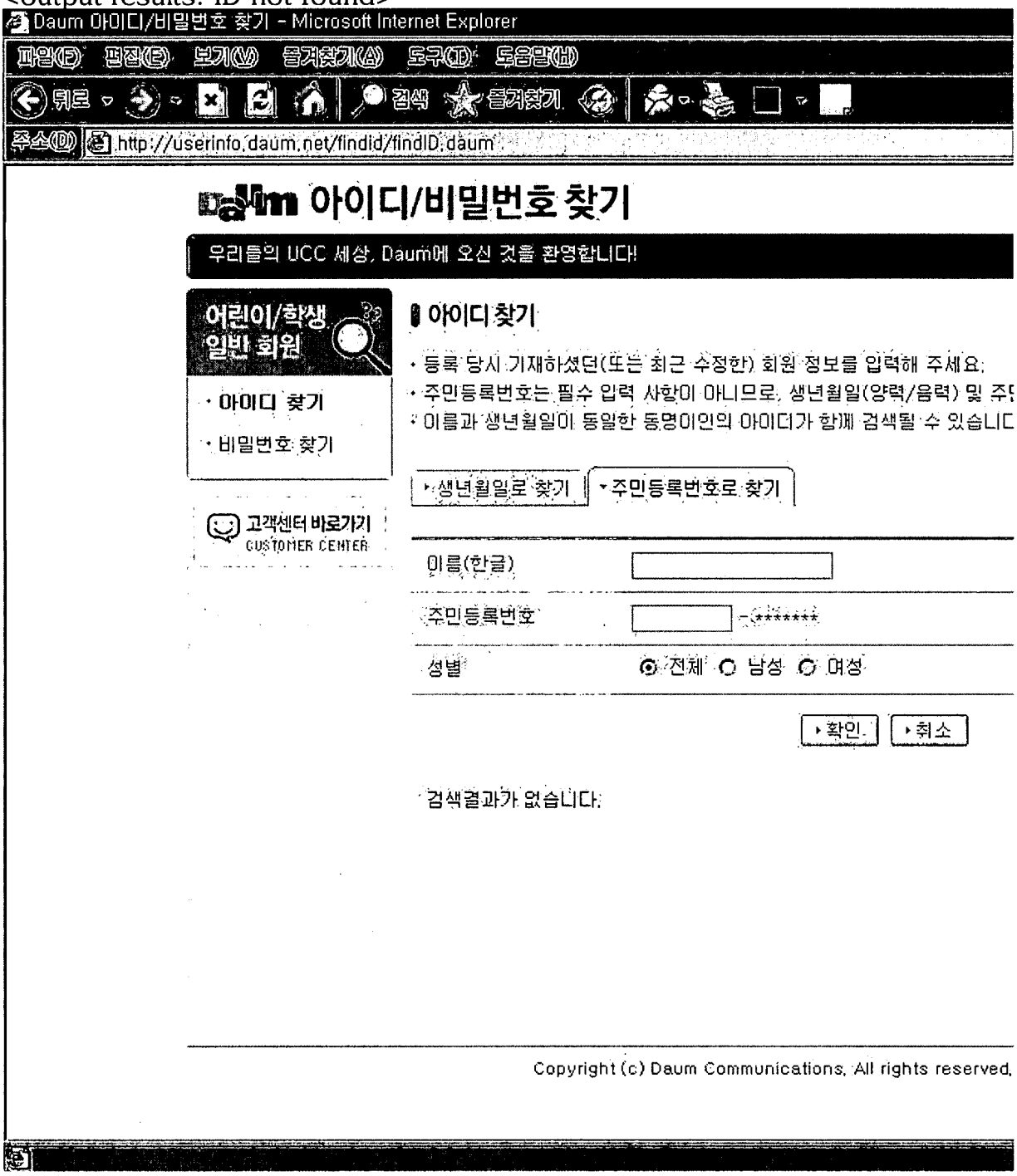

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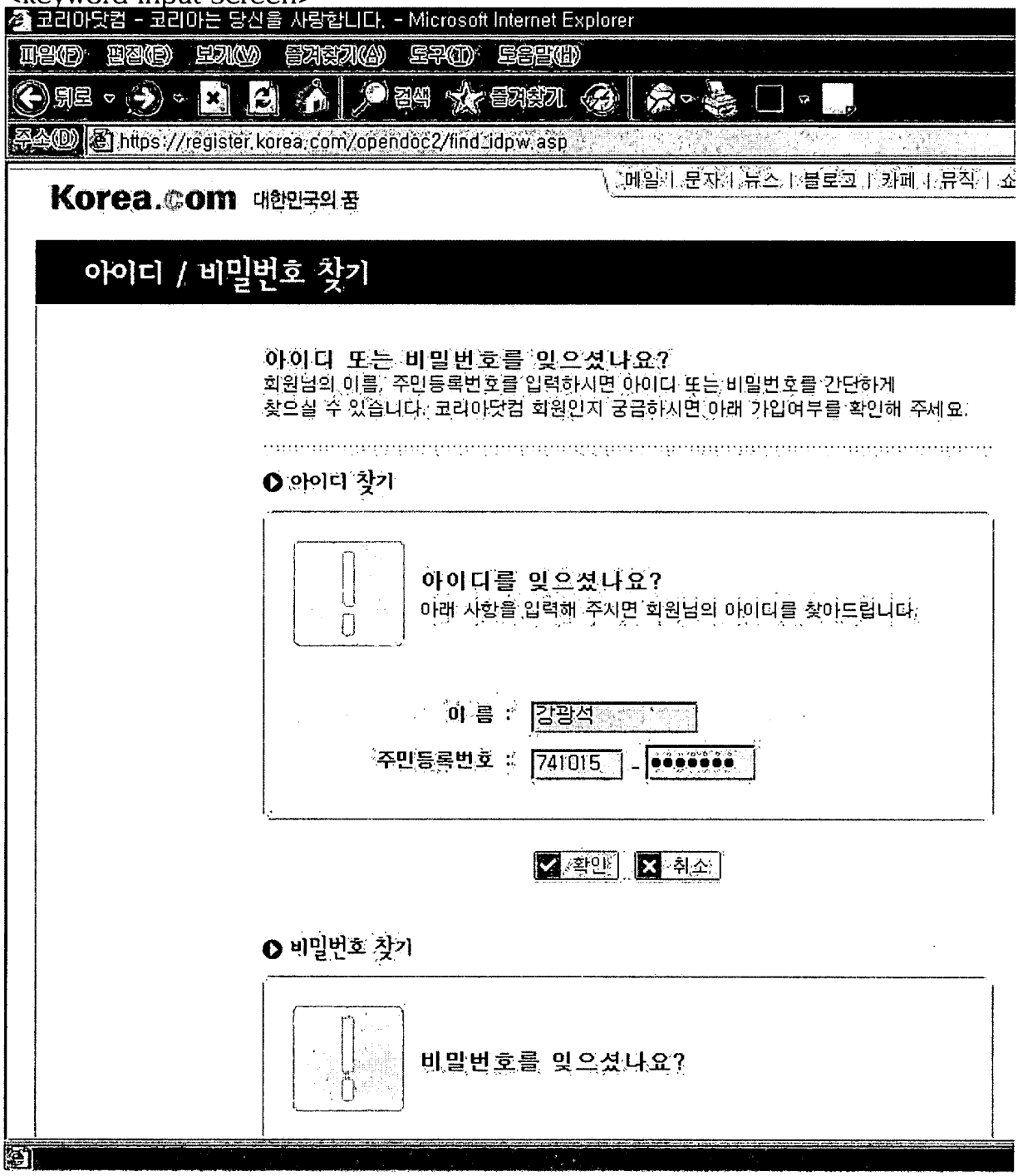

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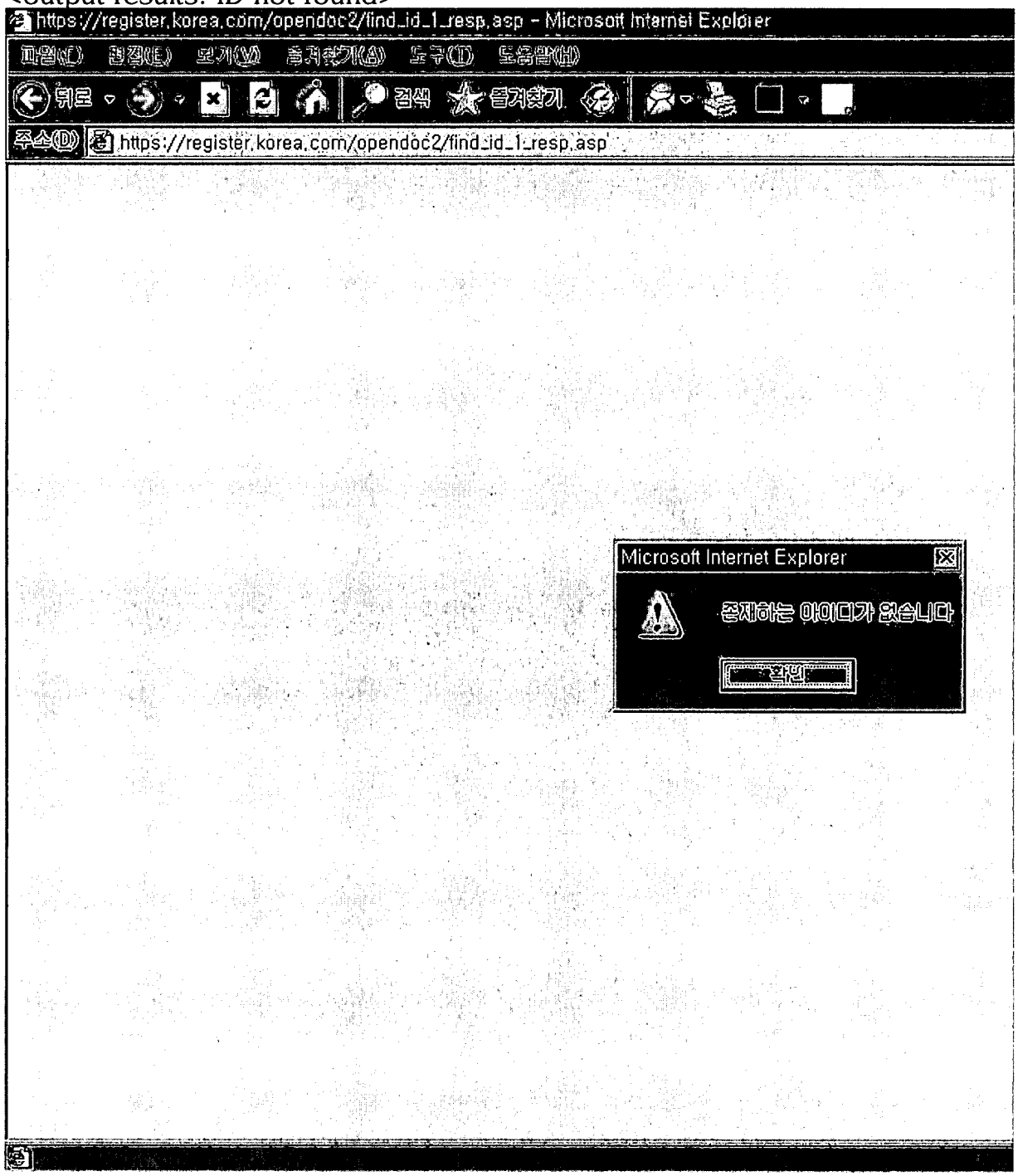

2007 - 04 - 18

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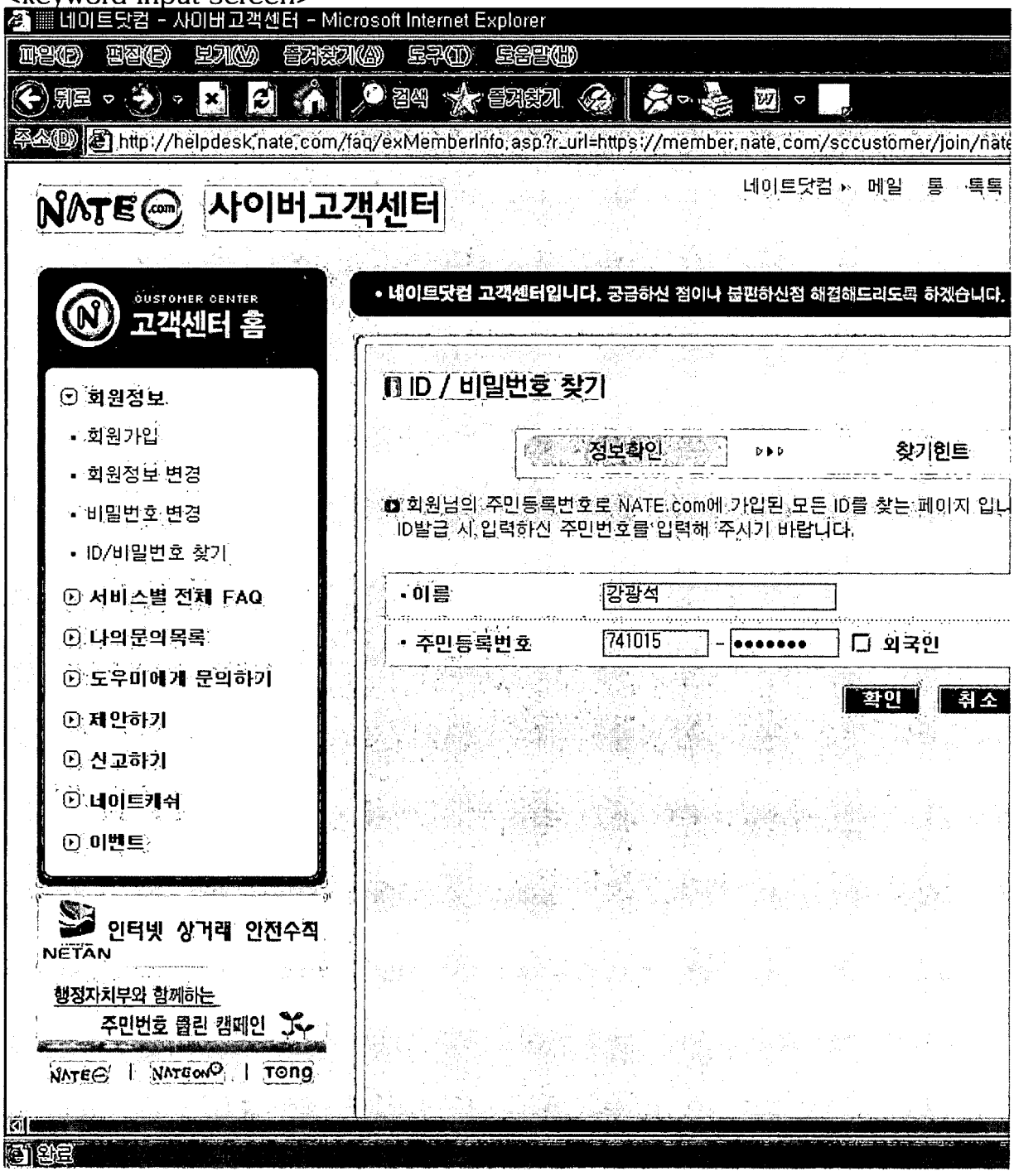
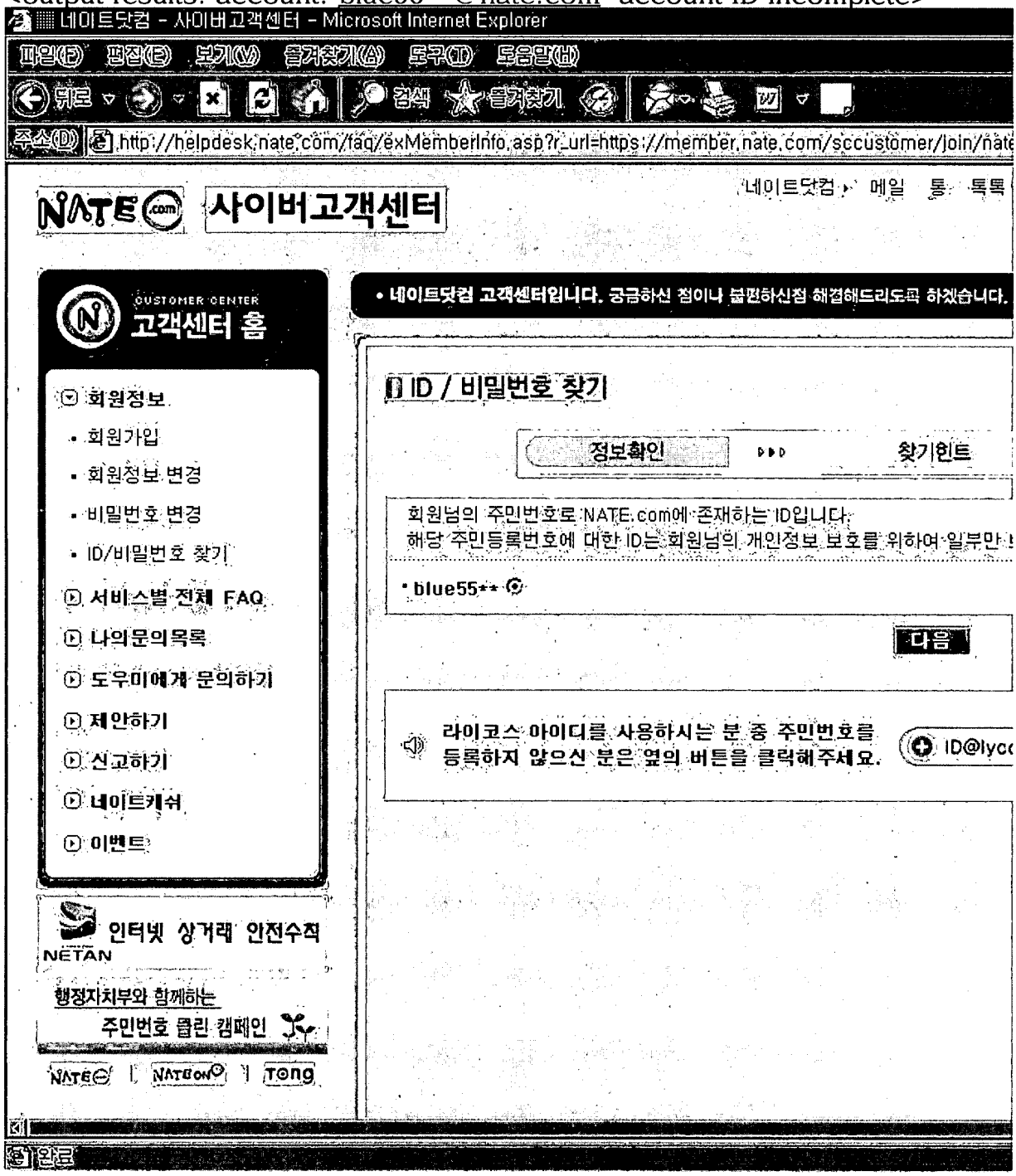


2007-04-18

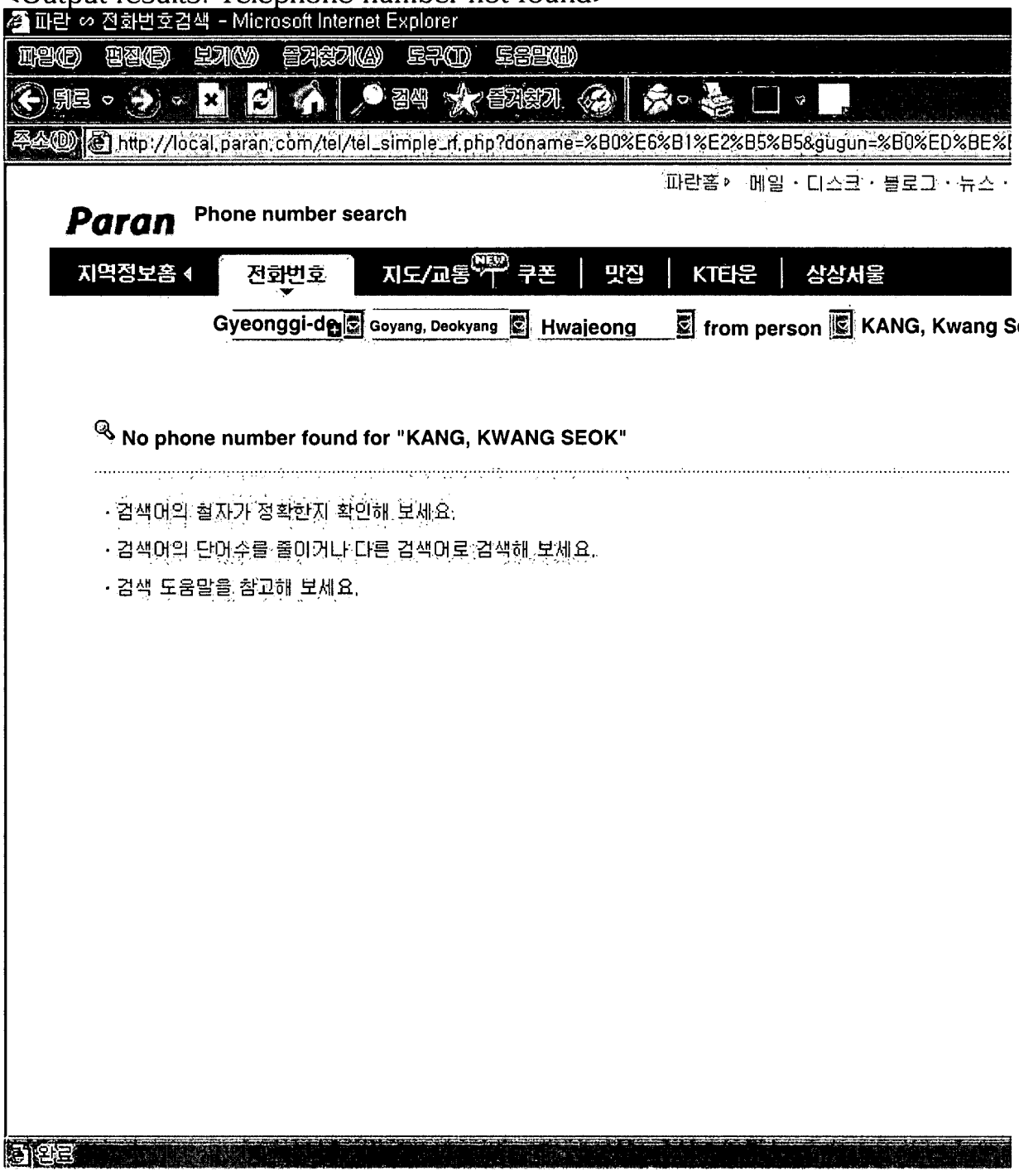
<output results: account: blue55**@nate.com account ID incomplete>



2007 - 04 - 18

(1) Search from http://local.paran.com/tel/
Phone number search: keywords "KANG, KWANG SEOK in Korean" & "Hwajeong-dong, Deokyang-gu, Goyang-si, Gyeonggi-do, partial address in Korean"

<Output results: Telephone number not found>



2007 - 04 - 18

(2) Search from www.yahoo.co.kr
Web-mail account search: keywords "KANG, KWANG SEOK in Korean" & "741015-1233719" (Residence ID)

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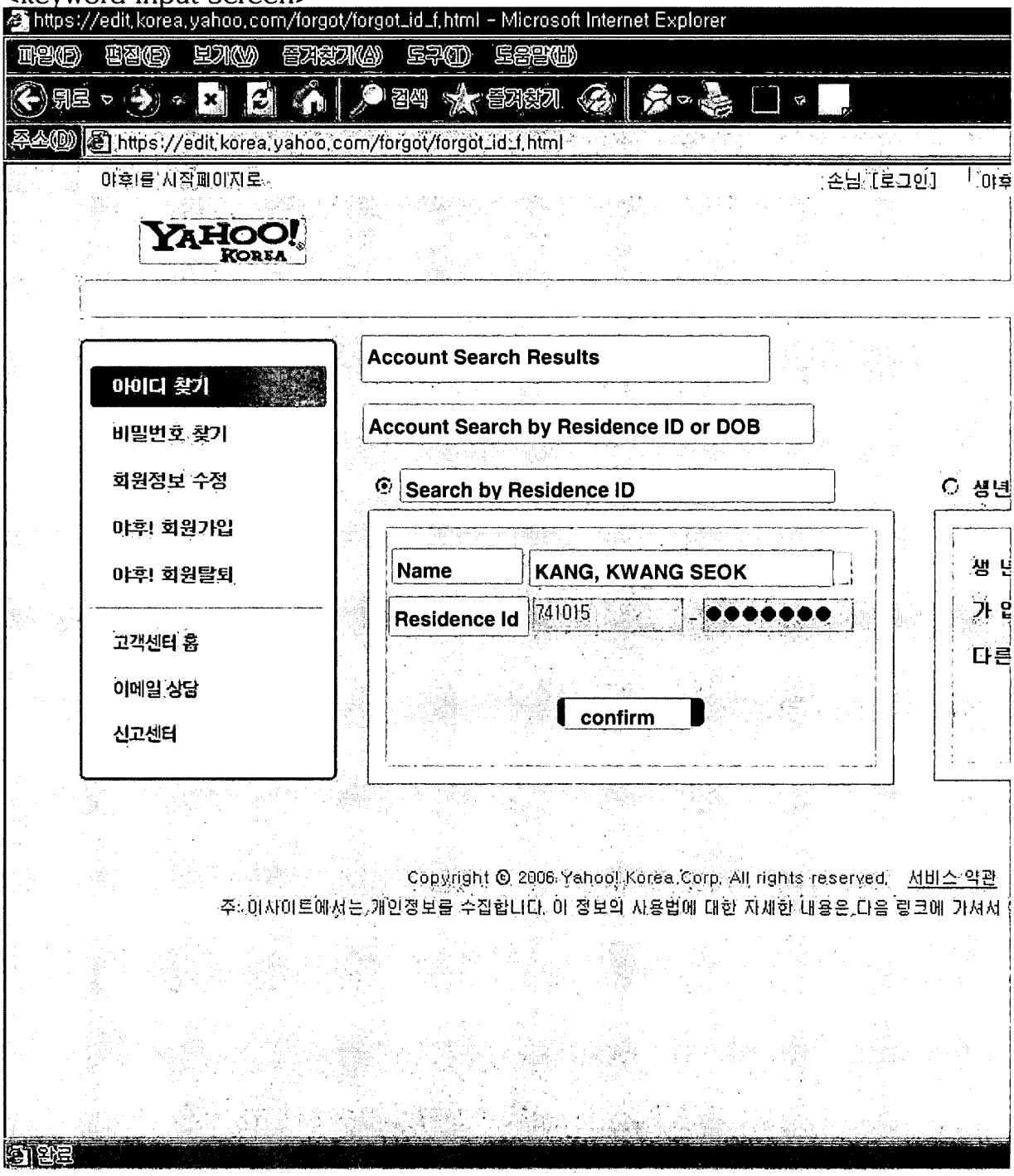

2007-04-18

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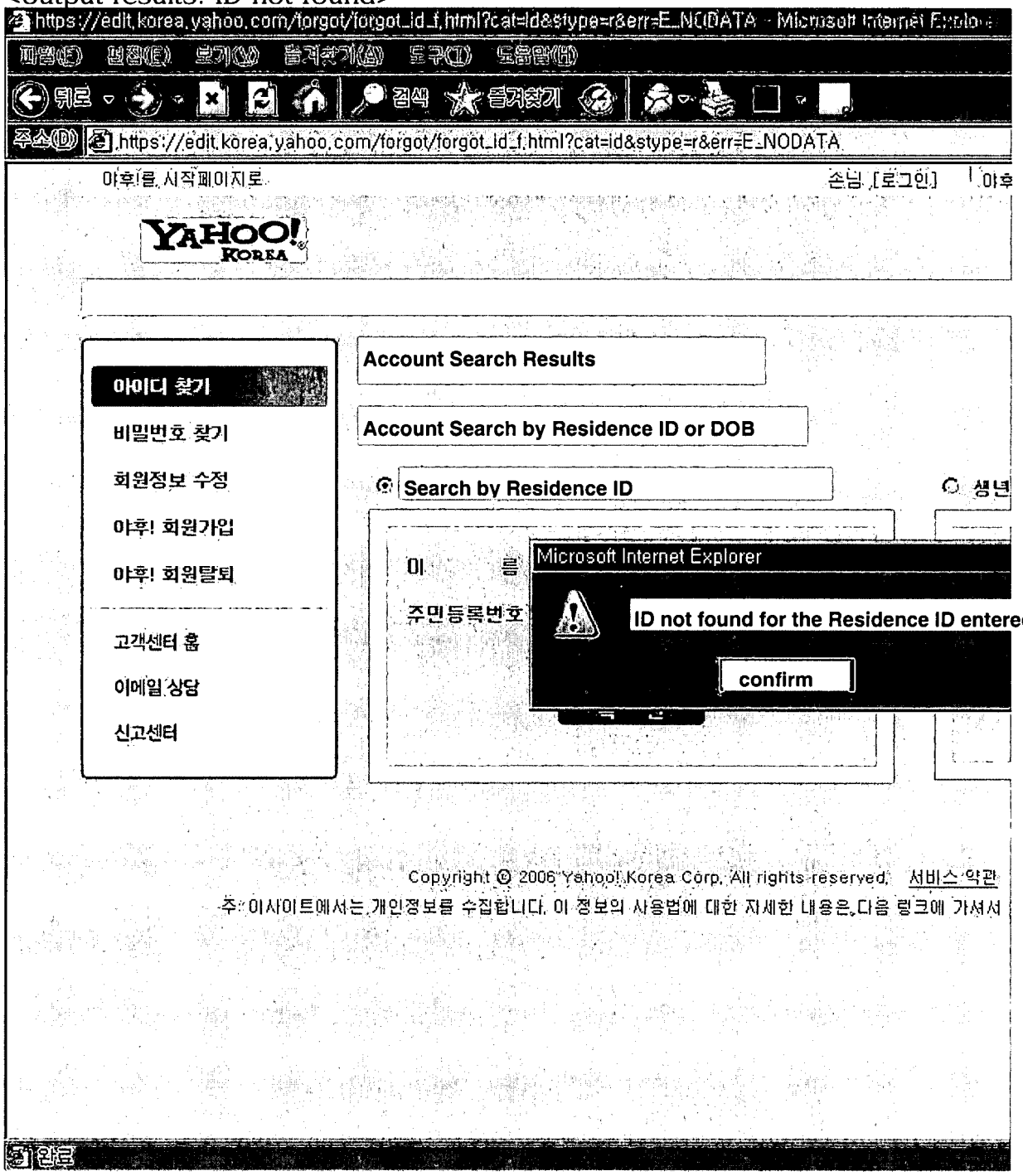

2007 - 04 - 18

(3) Search from www.empas.com
Web-mail account search: keywords "KANG, KWANG SEOK in Korean" & "741015-1233719" (Residence ID)

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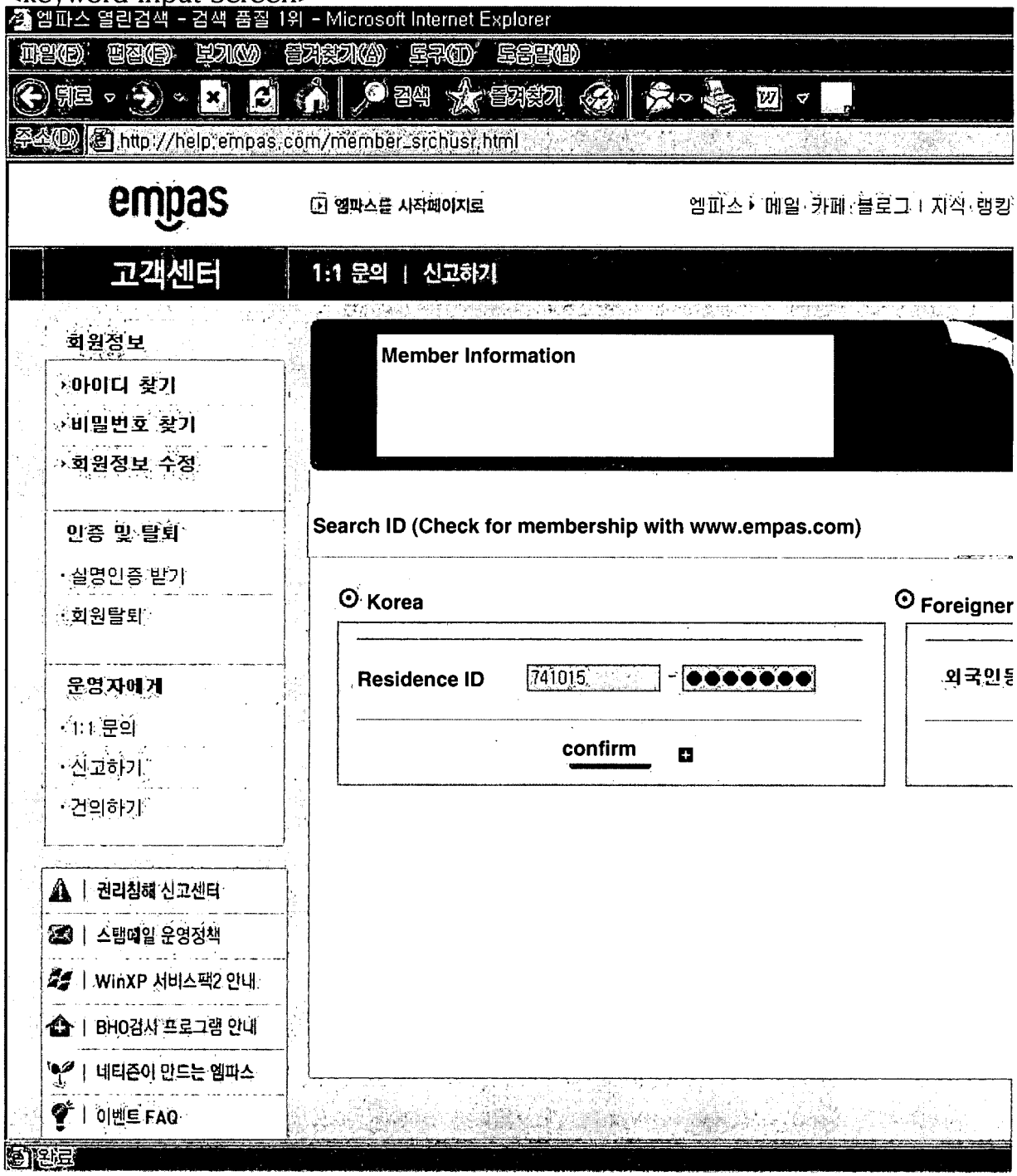

2007-04-18

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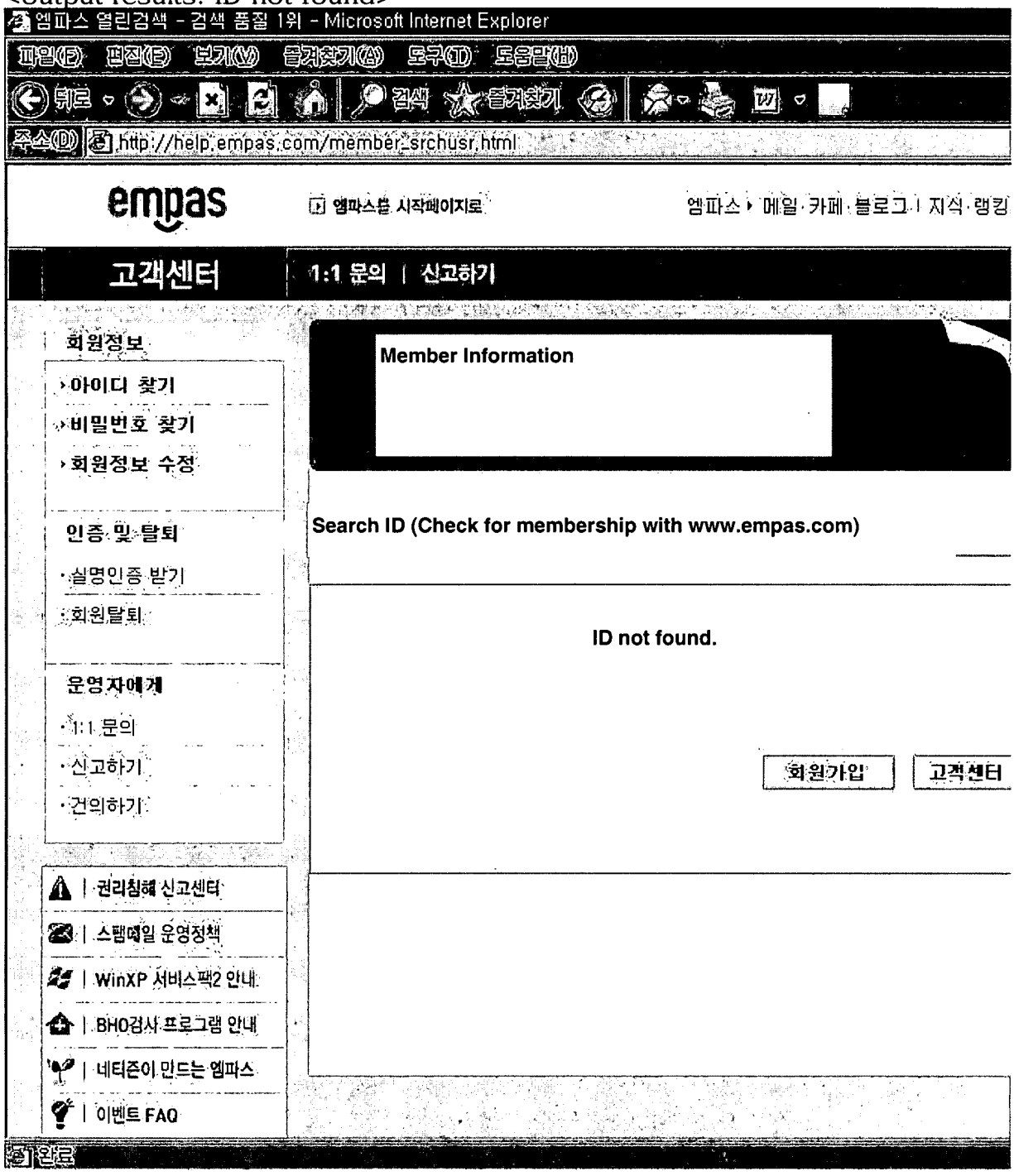

2007 - 04 - 18

(4) Search from www.daum.net
Web-mail account search: keywords "KANG, KWANG SEOK in Korean" & "741015-1233719" (Residence ID)

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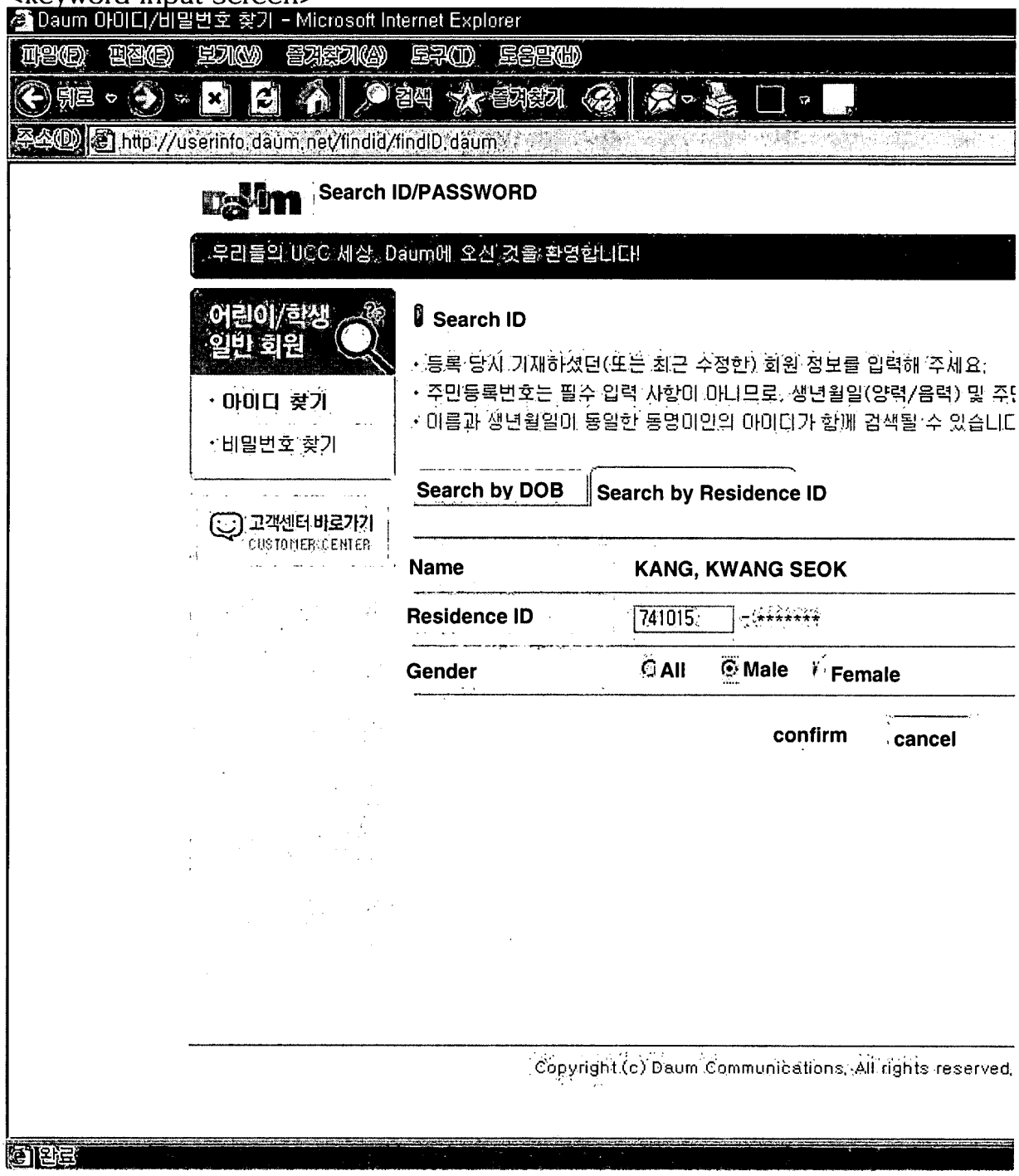

2007-04-18

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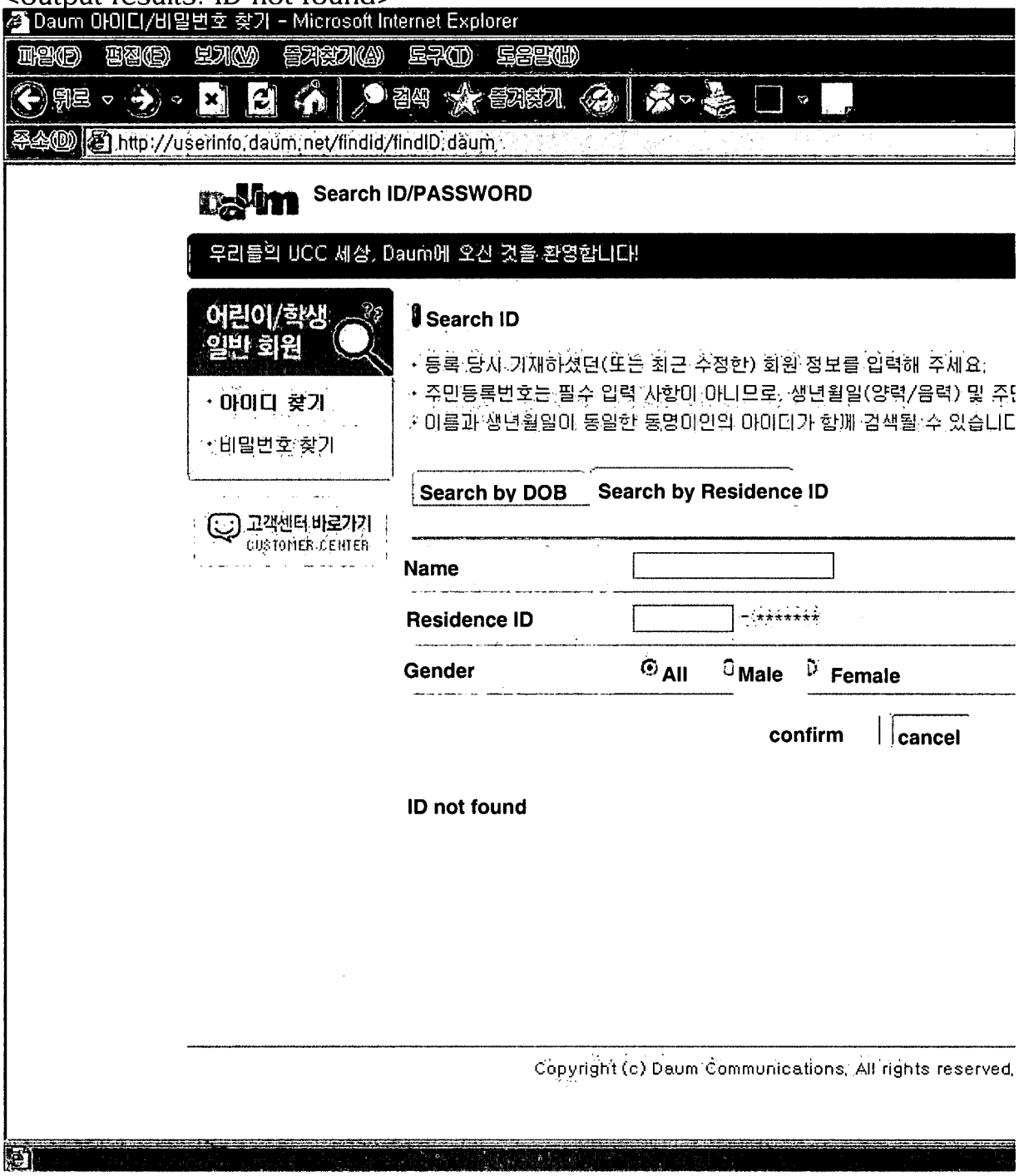

(5) Search from www.korea.com
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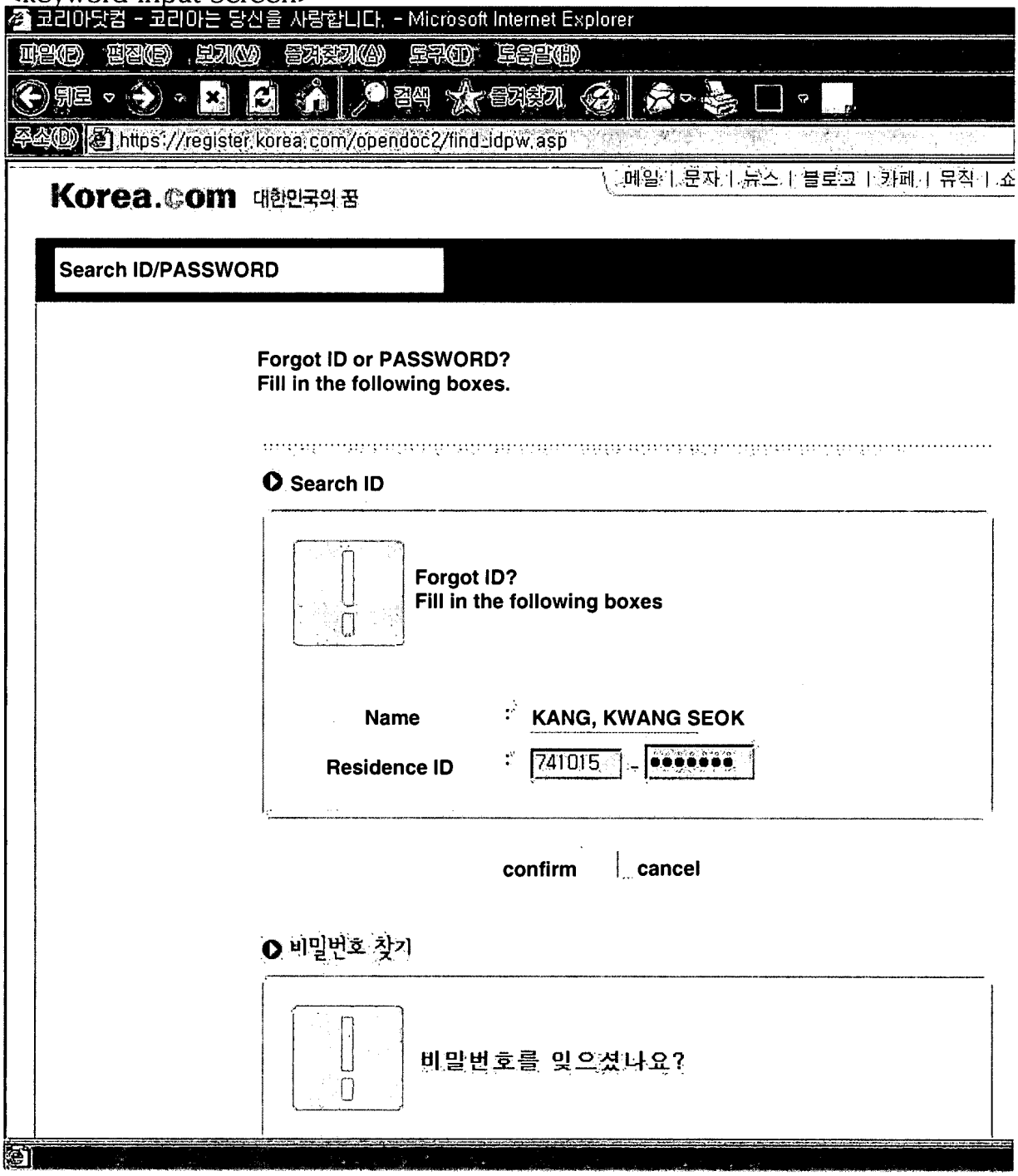

2007-04-18

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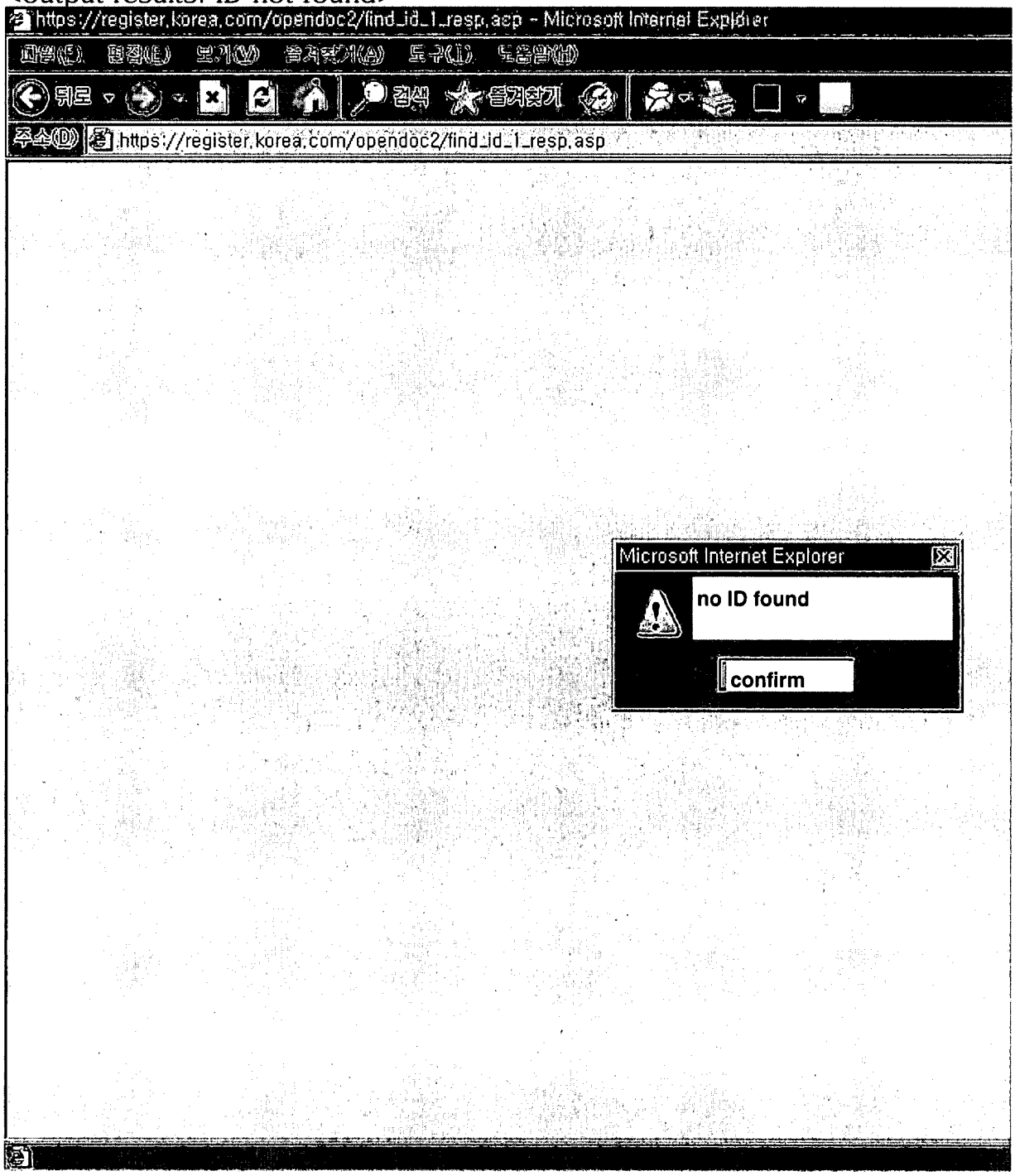

2007 - 04 - 18

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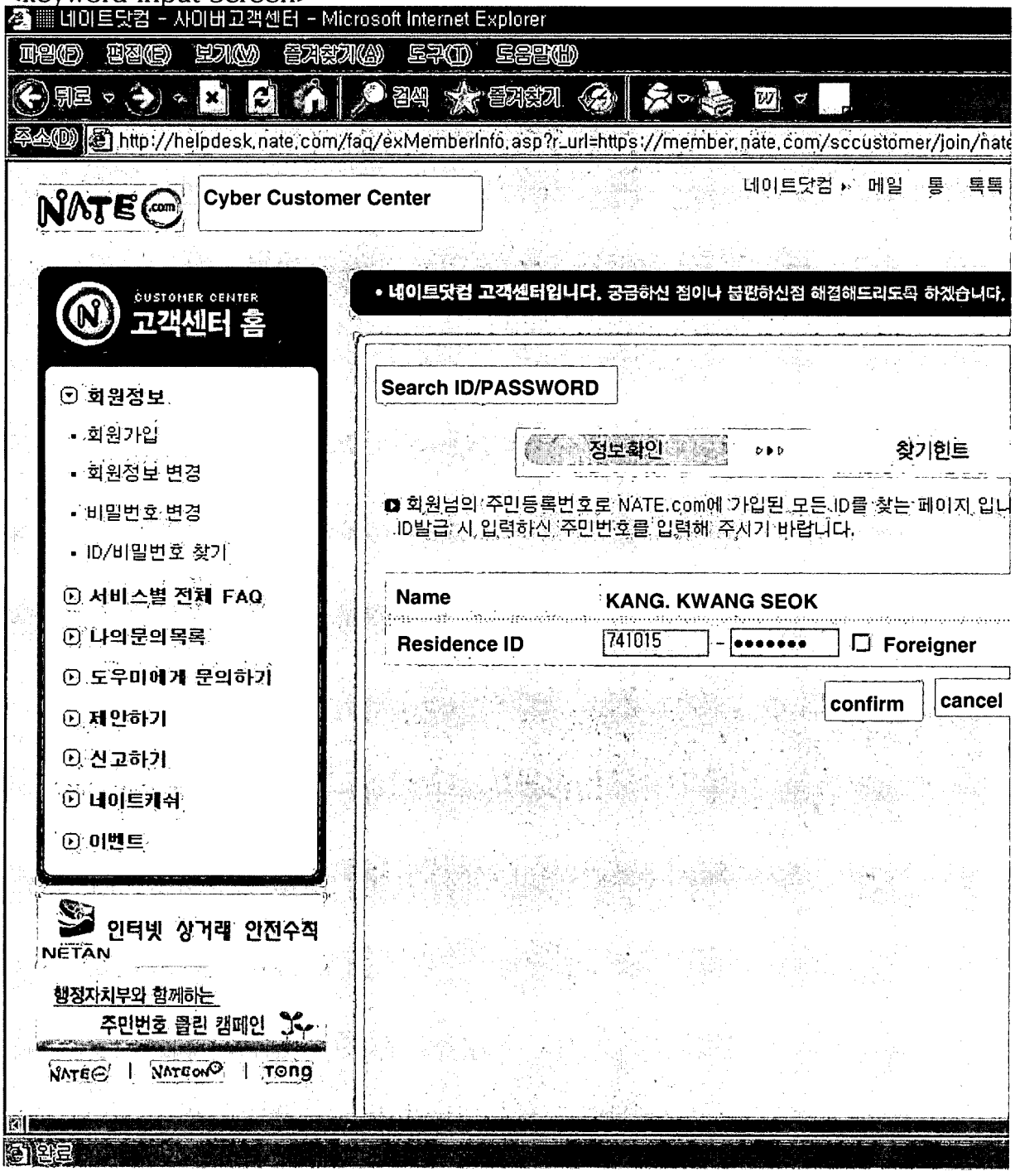

2007-04-18

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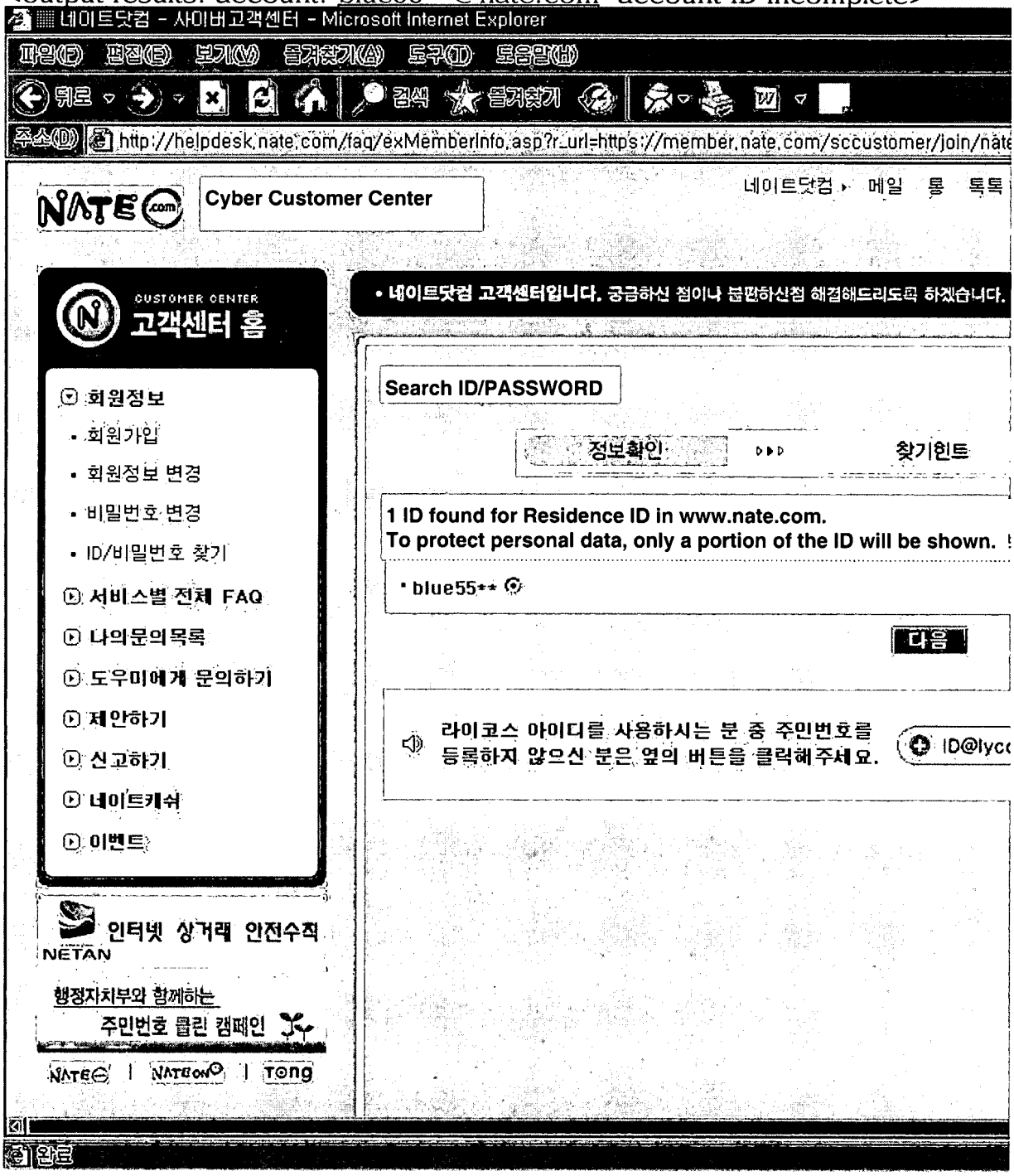


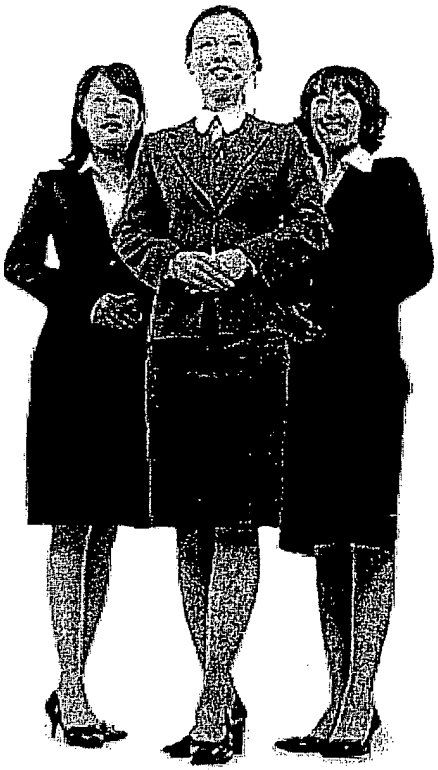
2007 - 04 - 18

EXHIBIT 7

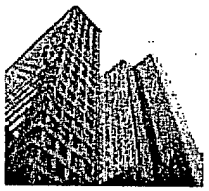
KOIS
한국인포서비스㈜

Korea Information Service

Seventy years of the directory
Assistance Service
will care on as the better public secretary



KOIS Company Info



KOIS Company
Overview

KOIS CEO'S
Message

KOIS
Vision

KOIS Product Info

- Directory Assistance Service
- Priority Directory Assistance Service
- Ad while Awaiting
- Call Center Consulting
- nice114
- Process Application to Subscribe KT Product
- Contrast Number DB Service

KOIS Invest Relation

- Business Result
- Stockholder / Shares Status
- Financial Information

200-16 Sungin2-Dong, Jongro-Gu, Seoul, 110-522, Korea

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Korea Information Service
Product

Nice114

Nice114 Info

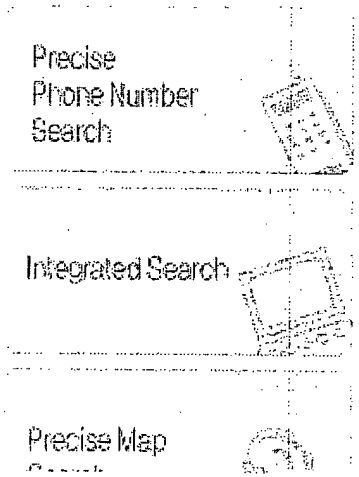
Service Overview

The KT 114 phone number voice assistance service is provided through wired/wireless internet whereby phone numbers and map information can be obtained by entering business names, business categories, names of people, or the keyword of services, and is the nation's best regional portal internet service providing useful everyday life information.

NICE114.CO.KR
전화번호와 지도가 한눈에

- Website Address : www.nice114.co.kr

Service Types



- precision and speed of the KT phone number DB! Phone number search service.
  new data updated twice daily based on the nation's largest KT phone number DB.
- one click! Integrated search service.
  nice priority information, business name information, business category information, life information numbers (080, 15xx, 700, public complaints, phone number changes) simultaneous search.
- powerful nice 14 map search service

Search

map search service providing 2D/3D maps together with shortest distance directory assistance.

MY 114

- My smart service
  various personal services provided such as schedule management, address book, memo pad, scrap book etc.

Community Service

- only the essential information collected
  provision of a community area where members can directly post/obtain essential information arranged in themed categories.

A variety of everyday life information services

- zip code search & subway station search (connecting line information)
- weather information service, accommodation search & reservations
- various document forms & legal information, lost children search service
- other contents to be continuously gained and provided

Close area search service (our neighborhood selection)

- service providing everyday life information for areas of interest by the user selecting a specific area

Service Inquiry

:: Tel | 02-2235-0385

:: Make Inquiry (Direct to Inquiry)

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KOIS
한국인포서비스(주)

Korea Information Service
Product

Directory Assistance Service

Basic Service

Service Overview

A service which searches and provides phone numbers when customers dial '114' and request the phone number of a subscriber with a specific category or business name (or person's name).

How to use

:: Standard Phone	Dial '114' or 'Area Code + 114'
:: Public Pay Phone	After inserting 100 won, dial '114' or 'Area Code + 114'
:: Cellular Phone & PCS	Dial 'Area Code + 114'

‣ For quick and precise directory assistance service, please state the correct business name (or person's name) and address (the location).

Charges

	Charges for Use	Particulars
Standard time	\120/number provided	No call charges
Premium time	\140/number provided	No call charges

:: Standard time	weekdays: 09:00 ~ 18:00, Saturday: 09:00 ~ 13:00
:: Premium time	weekdays: 00:00 ~ 09:00, 18:00 ~ 24:00 Saturdays: 00:00 ~ 09:00, 13:00 ~ 24:00 Public Holidays: 00:00 ~ 24:00

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DECLARATION IN SUPPORT OF PETITION UNDER 37 C.F.R. § 1.47(b) BY PERSON HAVING PROPRIETARY INTEREST TO FILE APPLICATION ON BEHALF OF INVENTOR

Dear Sir:

This Declaration is in support of Petition under 37 C.F.R. § 1.47(b) to allow UTStarcom, Inc. to make the application on behalf of the non-signing inventor(s) listed in **Schedule A**, column 3, whom we have been unable to locate.

1. I, **Joo-Young Kim**, am a citizen of Korea, residing at Sangyong, Apt No. 103-1101, Sungsu-dong 1-ga 16/3, Sungdong-gu, Seoul, Republic of Korea.

2. I am a Korean patent attorney with the law firm of Kim & Chang, located at Hungkuk Life Insurance Building, 9F, 226 Sinmunno 1-ga, Jongno-gu, Seoul 110-786, Korea.

3. On behalf of Kim & Chang, I am representing UTStarcom Korea Limited, a wholly owned subsidiary of UTStarcom, Inc.

4. I am knowledgeable regarding Korean Patent Law.

5. I submit this declaration in support of the accompanying memorandum of law.

6. The Korean company Hyundai Syscomm filed the Korean National Application listed in **Schedule A, Column 6** as the applicant of record, with inventor(s) in **Schedule A, column 3** listed as the inventor(s).

7. The filing of the above-referenced Korean Application by Hyundai Syscomm was not opposed by the Examiner or any third party including the employee/inventor.

8. On April 27, 2004, UTStarcom, Inc., through its wholly owned subsidiary UTStarcom Korea Limited, acquired Hyundai Syscomm's Intellectual Property Portfolio, including the rights to the Korean National Application listed in **Schedule A, column 6**, and duly recorded this change of ownership with the Korean Intellectual Property Office without objection.

9. As a result of the acquisition, UTStarcom, Inc. became the sole proprietary owner of Hyundai Syscomm's Intellectual Property Portfolio, which includes the above-referenced Korean National Application.

10. UTStarcom Korea Limited filed the PCT application listed in **Schedule A, column 8**, claiming priority to the above-referenced Korean National Application.

11. The above-referenced PCT application entered U.S. National phase in the United States on the date listed in Schedule A, column 5, having the U.S. Application Serial Number listed in **Schedule A, column 4.**

12. I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the

United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

Respectfully submitted,

Date: 16-January-2007 By: Joo-Young Kim

Joo-Young Kim
Kim & Chang
Hungkuk Life Insurance Building, 9F,
226 Sinmunno 1-ga, Jongno-gu,
Seoul 110-786, Korea

MEMORANDUM OF LAW IN SUPPORT OF PETITION UNDER 37 C.F.R. § 1.47(b) BY PERSON HAVING PROPRIETARY INTEREST TO FILE APPLICATION ON BEHALF OF INVENTOR

This memorandum of law is in support of Petition under 37 C.F.R. § 1.47(b) to allow UTStarcom, Inc. ("UTStarcom") to make the application on behalf of a non-signing inventor.

BACKGROUND

UTStarcom submitted a Petition under 37 C.F.R. § 1.47(b) to allow UTStarcom to make the Application, listed in **Schedule A,** column 4, on behalf of the inventor listed in **Schedule A, column** 3, whom UTStarcom has been unable to locate. The Petition was denied on the grounds that UTStarcom allegedly failed to establish a proprietary interest in the above-referenced U.S. Application.

STATEMENT OF FACTS

All facts in support of the argument and conclusion are set forth in the Declaration of Andrew Choung under M.P.E.P. 409.03(f).

ARGUMENT AND CONCLUSION

UTStarcom should be awarded title to the above-referenced U.S. Application because UTStarcom, as the assignee of patent rights to the underlying Korean Application and subsequent patent applications granted by the assignor Hyundai Syscomm Inc. ("Hyundai Syscomm"), is the sole proprietary owner of the U.S. Application.

Under Korean Patent Law, UTStarcom is recognized as the owner of the Korean Application. First, the Korean Intellectual Property Office recognizes UTStarcom as the current owner of the Korean Application as a matter of record. Second, the invention disclosure form executed by the inventor in favor of Hyundai Syscomm, which includes an assignment of the subject matter of the Korean Application from the inventor to Hyundai Syscomm, is more than sufficient to overcome any challenge to UTStarcom's ownership interest.

The Korean Patent Act provides that a patent application of an employee may be filed directly by the employee's company, without an explicit assignment from the employee to the employee's company. *Korean Patent Act, Article 42* (See Attached Exhibit 1). Unless the examiner or a third party contests the company's right to file the application, the company becomes the owner of the application. Thus, even in the absence of an employee-inventor assignment, a Korean Patent Application filed by a company without contest by others is the proprietary owner of the patent rights. *See Korean Patent Act, Article 42, Para 1* (See Attached Exhibit 1).

In the instant case, Hyundai Syscomm filed the Korean National Application listed in **Schedule A, column 6,** as the named applicant. The filing of the application was not contested by the Examiner or any third party. Thus, under Korean Law, Hyundai Syscomm became the owner of the Korean application even in the absence of an employee inventor assignment. Subsequently, the Hyundai Syscomm's patent portfolio, including the above-mentioned Korean Application, was assigned to UTStarcom. This assignment was recorded with the Korean Intellectual Property Office, without objection, making UTStarcom the legal owner of the above-mentioned Korean Application.

Under the present circumstances, only the inventor(s) may challenge the legitimacy of Hyundai Syscomm's ownership of the Korean Application. *Korean Patent Act, Articles 34 and 35* (See Attached Exhibit 1). However, any challenge by the inventor(s) would fail under Korean Patent Law. The inventor(s) executed an invention disclosure form, which assigns the subject matter of the Korean Application to Hyundai Syscomm. Because the subject matter described in the invention disclosure form is virtually identical to the subject matter contained in the Korean Application, the assignment therein would be deemed by a Korean court of law to assign the Korean Application to Hyundai Syscomm. *See In-Chul Choi v. Samsung Electonics Co., Ltd., 2001 Gahap 13977 (Seoul District Court, August 22, 2002)* (See Attached Exhibit 2) (recognizing the validity of the assignment based on the content in the invention disclosure form despite the absence of a specific application number reference). Thus, even if challenged, the chain of title of the Korean Application would be sustained under Korean Patent Law and UTStarcom would remain the ultimate owner.

This ownership of the Korean Application, in conjunction with the other assignment terms of the acquisition agreement previously submitted, establishes UTStarcom's rights to the subsequent PCT application and U.S. national phase application. Thus, UTStarcom has a proprietary interest in the referenced U.S. Application listed in Schedule A, column 3, and should be allowed to make the application in U.S. on behalf of the missing inventor under 37 C.F.R. § 1.47(b).

Respectfully submitted

Date: 16-January-2007 By: Joo-Young Kim

Joo-Young Kim

Kim & Chang
Hungkuk Life Insurance Building, 9F,
226 Sinmunno 1-ga, Jongno-gu,
Seoul 110-786, Korea

Exhibit 1

[KOREAN PATENT ACT]	[TRANSLATION]
제 34 조 (무권리자의 특허출원과 정당한 권리자의 보호) 발명자가 아닌 자로서 특허를 받을 수 있는 권리의 승계인이 아닌 자(이하 "무권리자"라 한다)가 한 특허출원이 제 33 조제 1 항 본문의 규정에 의한 특허를 받을 수 있는 권리를 가지지 아니한 사유로 제 62 조 제 2 호에 해당되어 특허를 받지 못하게 된 경우에는 그 무권리자의 특허출원후에 한 정당한 권리자의 특허출원은 무권리자가 특허출원한 때에 특허출원한 것으로 본다. 다만, 무권리자가 특허를 받지 못하게 된 날부터 30 일을 경과한 후에 출원을 한 경우에는 그러하지 아니하다.	**Article 34 (Patent Application Filed by an Unentitled Person and Protection of the Lawful Holder of a Right)** Where a patent cannot be granted because an application was filed by a person who is not the inventor or a successor to the right to obtain a patent (referred to as "an unentitled person") under Article 33(1) as prescribed in Article 62(ii), a subsequent application filed by the lawful holder of the right is deemed to have been filed on the filing date of the earlier application filed by the unentitled person. This provision does not apply, however, if the subsequent application is filed by the lawful holder of the right more than thirty days after the date on which the application filed by the unentitled person was rejected.
제 35 조 (무권리자의 특허와 정당한 권리자의 보호) 제 33 조제 1 항 본문의 규정에 의한 특허를 받을 수 있는 권리를 가지지 아니한 사유로 제 69 조 제 1 항 제 2 호에 해당되어 특허취소결정이 확정된 경우 또는 제 33 조 제 1 항 본문의 규정에 의한 특허를 받을 수 있는 권리를 가지지 아니한 사유로 제 133 조 제 1 항 제 2 호에 해당되어 특허를 무효로 한다는 심결이 확정된 경우에는 그 특허출원후에 한 정당한 권리자의 특허출원은 취소 또는 무효로 된 그 특허의 출원시에 특허출원한 것으로 본다. 다만, 그 특허의 등록공고가 있는 날부터 2 년을 경과한 후에 특허출원을 하거나 취소결정 또는 심결이 확정된 날부터 30 일을 경과한 후에 특허출원을 한 경우에는 그러하지 아니하다.	**Article 35 (Patent Granted to an Unentitled Person and Protection of the Lawful Holder of a Right)** Where a decision to revoke a patent becomes final for lack of entitlement to obtain a patent under Article 33(1) as prescribed in Article 69(1)(ii) or a decision to invalidate becomes final due to a lack of entitlement under Article 33(1) as prescribed in Article 133(1)(ii), a subsequent application filed by the lawful holder of the right is deemed to have been filed on the filing date of the revoked or invalidated application. However, this provision does not apply if the subsequent application is filed more than two years after the publication date of the first application or more than thirty days after the decision to revoke or invalidate becomes final.

[KOREAN PATENT ACT]	[TRANSLATION]
제 42 조 (특허출원) ①특허를 받고자 하는 자는 다음 각호의 사항을 기재한 특허출원서를 특허청장에게 제출하여야 한다. 1. 특허출원인의 성명 및 주소(법인인 경우에는 그 명칭 및 영업소의 소재지) 2. 특허출원인의 대리인이 있는 경우에는 그 대리인의 성명 및 주소나 영업소의 소재지(대리인이 특허법인인 경우에는 그 명칭, 사무소의 소재지 및 지정된 변리사의 성명) 3. 삭제 4. 발명의 명칭 5. 발명자의 성명 및 주소 6. 삭제	**Article 42 (Patent Application)** (1) A person seeking to register a patent shall file a patent application with the Commissioner of the Korean Intellectual Property Office, stating the following: (i) the name and address of the applicant (and, if a legal entity, the name and address of the business); (ii) the name and residential or business address of the agent, if any (and, if the agent is a patent legal entity, the name and address of the business and the name of the designated patent attorney); (iii) deleted; (iv) the title of the invention; (v) the name and address of the inventor; (vi) deleted.

Exhibit 2

[Translation]

Seoul Southern District Court

Judgment

Case No.	2001 Gahap 13977
Plaintiff:	In Chul Choi
Defendant:	Samsung Electronics Ltd.
Pronouncement:	August 22, 2002

ORDER

The confirmation claim of the present action is dismissed.

Tenor of Complaint

Plaintiff hereby seeks confirmation that the patented inventions, described in the patent right list of the accompanying sheet, do not belong to an in-service invention.

GROUNDS

1. Findings of Facts

A. The Defendant's company, taking fabrication, sale, etc. of communication mechanisms and related devices as its objective under its constitution, has manufactured mobile-phone terminals since May of 1989. The Plaintiff entered the Defendant's company on January 10, 1989, and had served as a member of a team known as the "Time Machine Team (TMT)" between July 13, 1992 and February 16, 1995.

B. TMT of the Defendant's company is a department that was organized by selecting incumbent staff to create ideas for new product development. TMT holds a weekly evaluation meeting, where team members exchange ideas equipped with marketability and practicability, and hold quarterly meetings that report the results to the board of directors, assigning no specific tasks to its team members. The Plaintiff was mainly focused on conceiving and commercializing a new Hangul inputting method, submitting a report titled "Value of Text in the Multimedia World" showing the needs and practicability

of a new Hangul inputting method on May 20, 1994, and a report titled "First report regarding commercialization drive of a new Hangul inputting method" on July 18, 1994, together with his teammate, Dong Ki Rui.

C. During his tenure on TMT, the Plaintiff invented "Method and Apparatus for Generating Text Inputting Codes (hereinafter, referred to as the 'first invention')," described in patent right list 1 of the accompanying sheet, and transferred the right to obtain a patent for the Defendant's company while providing an in-service invention report on the first invention on February 19, 1993. The Defendant's company filed a patent application for the first invention in its name on July 6, 1993, and completed the patent registration on March 13, 1996.

D. Furthermore, the Plaintiff, together with his teammate, Dong Ki Rui, invented "Method and Apparatus for Generating Text Inputting Codes (hereinafter, referred to as the 'second invention')" described in patent right list 2, and transferred the right to obtain a patent for the Defendant's company while providing an in-service invention report on the second invention on October 13, 1994. The Defendant's company filed a patent application for the second invention in its name on May 11, 1995, and completed the patent registration on August 10, 1998.

E. The Defendant's company has manufactured and sold mobile-phone terminals using the text inputting methods of the inventions since November of 1998.

2. The Plaintiff's Claims and Holding thereon

A. Gist of the Plaintiff's Claims

The Plaintiff seeks: (a) confirmation that the fist and second inventions are not an in-service invention, arguing that the inventions were misconceived as an in-service invention and filed in the name of the Defendant's company although they actually belong to a liberal invention; and (b) the Defendant's return of 1 billion KrW as part of an unjust enrichment, arguing that since the contracts of transfer were based on a misconception for

the inventions to be an in-service invention are invalid, the Defendant is not a legitimate patentee and has an obligation to return, to the Plaintiff, the profits earned by practicing the inventions as an unjust enrichment.

B. Relevancy of the Confirmation Claim

The Defendant made a defense prior to a main hearing that the Plaintiff's confirmation claim lacks eligibility and thus is irrelevant because it seeks confirmation of a factual matter. The Plaintiff seeks the confirmation for the first and second inventions to not be an in-service invention as a basis for the unjust enrichment return claim being sought by the present action. This is to confirm part of a legal requirement fact, and thus is irrelevant. Furthermore, the confirmation stake of a confirmation action can be recognized if the obtainment of a confirmation judgment is the most effective and appropriate means for eliminating the challenge and risk when the plaintiff's legal status is challenged and risked. However, as will be seen in item C. (1), even though the first and second inventions were not an in-service invention, this would not affect the patent right registered in the name of the Defendant's company, unless the invalidation decision is rendered and becomes final and conclusive in a patent registration invalidation trial. Therefore, because seeking the confirmation for the inventions to not be an in-service invention cannot be seen as an effective and appropriate means, the Plaintiff's confirmation claim of the present action is irrelevant.

C. Unjust Enrichment Return Claim

(1) The Plaintiff argues first, that since the first and second inventions are not an in-service invention but a liberal one, each contract for transferring each right to obtain a patent to the Defendant is invalid per se for primitive impossibility of the objective of a legal activity or under Article 39, Paragraph 1 of the Patent Act, or invalid for violating Article 103 of the Civil Code.

In regard to this, if the first and second inventions belong to a liberal invention, Article 39, Paragraph 1 of the Patent Act stipulates that an invention constitutes an in-service invention if the invention was made by an employee, etc. in connection with his/her service and falls by nature within the business

range of the employer, etc., and the activity resulting into the invention was part of the present or past duties of the employee, etc.

As previously seen, the Defendant's company takes the fabrication and sale of communication mechanisms as one of its founding objectives, and has set the mobile-phone terminal as one of the primary manufactured items from the year of 1989 through to the present time. Since the inventions are directed to a text inputting method usable for mobile-phone terminals, these are regarded to fall within the business range of the Defendant's company. Furthermore, the Plaintiff's then duty was to create ideas for new products development in the field of the information and telecommunication at the time of conceiving each invention, and the Plaintiff reached the first and second inventions substantially as a result of focusing mainly on collecting ideas for a Hangul inputting method. As such, each invention is determined to fall within the Plaintiff's duty.

Therefore, since the first and second inventions should belong to an in-service invention, the Plaintiff's arguments contend the validity of each transfer contact on premise of the opposite.

(2) The Plaintiff also argues that since the patent application for the second invention was filed four months after the Defendant's company succeeded to the right to the invention from the Plaintiff, the second invention should be regarded as a liberal invention under Article 11, Paragraph 1 of the Invention Promotion Act, and the Defendant should return unjust enrichment, amounting to the royalty of a non-exclusive license, for failing to obtain consent to a non-exclusive license from the inventor Plaintiff under Article 2 of the same.

Article 11 of the Invention Promotion Act views an invention as a liberal invention in case an employer, etc. fails to file a patent application within a period designated under the Presidential Order (Article 5 of the same designates the period for four months) after succeeding the right to an in-service invention or waive filing of the application in writing (Paragraph 1), and stipulates that the employer, etc. cannot own a non-exclusive license to the in-service invention being regarded as a liberal one without the consent of the employee, etc in spite of Article 39, Paragraph 1 of the Patent Act (Paragraph

2). The fact that the Defendant's company filed the application for the second invention on May 11, 1995, four months passing from October 13, 1994 when the Defendant's company succeeded to the right to the second invention from the Plaintiff, is as previously seen.

However, even if the Defendant's company had completed the patent registration in its name, although the transfer contract of the second invention was invalidated under the above provision and the Defendant's company did not have a right to obtain a patent, the Plaintiff could not assert invalidity of the patent right having been registered in the name of the Defendant's company until the patent invalidation decision goes final and conclusive. Of course, the Plaintiff could request a patent invalidation trial based on the above grounds, which however, is not feasible here. Therefore, the Defendant has a right to legally practice the invention, and needs not obtain consent of the Plaintiff for practicing the invention because the Plaintiff did not register the patent in his/her own name. As such, the Plaintiff's above arguments are groundless and unreasonable.

서 울 지 방 법 원

남 부 지 원

판 결

사 건	**2001가합13977호**
원 고	최인철
피 고	삼성전자주식회사
핀 결 선 고	2002. 8. 22.

주 문

이 사건 소 중 확인청구 부분을 각하한다.

청 구 취 지

원고와 피고 사이에서 별지 특허권목록 기재 1, 2의 특허발명은 직무발명이 아님을 확인한다.

이 유

1. 기초사실

가. 피고회사는 통신기계기구 및 관련기구와 그 부품의 제작, 판매 등을 그 정관상의 목적으로 하고, 1989. 5.경부터 이동전화단말기를 생산해 온 회사이고, 원고는 1989. 1. 10. 피고회사에 입사하여 1992. 7. 13.부터 1995. 2. 16.까지 사이에 피고회사의 '타임머쉰팀'에 소속되어 근무하였다.

나. 피고회사의 '타임머쉰팀'은 신상품개발을 위한 아이디어 창출을 위하여 사내공모를 통해 직원을 선발, 조직한 부서로 그 팀원들은 구체적인 특정 업무를 맡지 아니한 채 매주 팀원들간에 시장성과 실현성 있는 아이디어를 제출하는 평가회를 가지고, 분기별로 경영진을 대상으로 그 결과물을 발표하는 정기 보고회를 개최하였는데, 원고는 같은 팀원인 류동기와 함께 1994. 5. 20. 새로운 한글입력방식의 필요성과 실용화 방안에 관한 '멀티미디어 세계에서 문자의 가치'라는 보고서를, 1994. 7. 18. '새로운 한글입력방법 사업화추진 1차 보고서'를 각 제출하는 등 주로 새로운 한글입력방식의 고안 및 사업화에 주력하였다.

다. 원고는 위 타임머쉰팀에 근무하던 중, 별지 특허권목록 1. 기재의 '문자입력코드 발생방법 및 장치'(이하 '제1발명'이라 한다)를 발명하고, 1993. 2. 19. 피고회사에 제1발명에 관한 직무발명신고를 하면서 특허받을 권리를 양도하였으며, 피고회사는 1993. 7. 6. 피고회사 명의로 제1발명에 관한 특허를 출원하여 1996. 3. 13. 특허등록을 마쳤다.

라. 또한 원고는 위 류동기와 함께 위 목록 2. 기재의 '문자입력코드 발생장치 및 방법'(이하 '제2발명'이라 한다)을 발명하고, 1994. 10. 13. 피고회사에 제2발명에 관한 직무발명신고를 하면서 특허받을 권리를 양도하였으며, 피고회사는 1995. 5. 11. 피고회사 명의로 제2발명에 관한 특허를 출원하여 1998. 8. 10. 특허등록을 마쳤다.

마. 피고회사는 1998. 11.경부터 위 발명들의 문자입력방식을 이용한 이동전화단말기를 생산, 판매해 오고 있다.

2. 원고의 청구 및 이에 대한 판단

가. 원고의 청구내용

원고는 ① 위 각 발명은 원고 개인의 자유발명에 해당됨에도 직무발명으로 오인되어 피고 명의로 특허등록이 된 것이라고 주장하면서 제1, 2발명이 직무발명이 아니라는 확인을 구하고, ② 위 발명들을 직무발명으로 오인하고 체결한 각 양도계약이 무효인 이상 정당한 특허권자가 아닌 피고는 위 발명들을 실시하여 얻은 수익을 부당이득으로서 원고에게 반환할 의무가 있다고 주장하면서, 그 일부로서 10억원을 지급할 것을 구한다.

나. 확인청구 부분의 적법성

피고는, 원고의 위 확인청구는 사실관계의 확인을 구하는 것으로 확인의 소의 대상적격이 없어 부적법하다고 본 안전 항변을 하므로 살피건대, 원고의 위 확인청구는 원고가 이 사건 소로써 구하고 있는 부당이득반환청구의 전제로 제1, 2발명이 직무발명이 아니라는 확인을 구하는 취지인바, 이는 법률요건사실 일부의 확인을 구하는 것이어서 부적법하고, 또한 확인의 소에 있어서 확인의 이익은 원고의 법적 지위가 불안, 위험할 때 그 불안, 위험을 제거하는데 있어 확인판결을 받는 것이 가장 유효·적절한 수단인 경우에 인정된다 할 것인데, 아래 다.의 (2)항에서 보는 바와 같이 가사 제1, 2발명이 직무발명이 아니라 하더라도 특허무효심판절차에서 무효심결이 확정되지 아니하는 이상에는 피고회사 명의로 등록된 특허권에 어떠한 효력이 미친다고 볼 수도 없으므로, 위 발명들이 직무발명이 아니라는 확인을 구하는 것은 원고에게 현존하는 법적 불안, 위험을 해소할 수 있는 유효·적절한 수단이라 할 수 없으니, 결국 원고의 이 사건 소 중 확인청구 부분은 부적법하다.

다. 부당이득반환청구 부분

(1) 원고는 먼저, 제1, 2발명은 직무발명이 아닌 자유발명이므로 그 특허받을 권리를 피고에게 양도한 위 각 양도계약은 법률행위 목적의 원시적 불능 또는 특허법 제39조 제3항에 의하여 당연 무효이거나 민법 제103조에 위반되어 무효라고 주장한다.

그러므로 과연 제1, 2발명이 자유발명인지에 관하여 보건대, 특허법 제39조 제1항은 직무발명의 개념에 관하여 종업원 등이 그 직무에 관하여 발명한 것이 성질상 사용자 등의 업무범위에 속하고, 그 발명을 하게 된 행위가 종업원 등의 현재 또는 과거의 직무에 속하는 경우 그 발명은 직무발명이라고 규정하고 있다.

앞에서 본 바와 같이 피고회사는 통신기계기구의 제작, 판매를 그 설립목적의 하나로 규정하고 있고, 1989년부터 현재까지 이동전화단말기를 주요 생산품목으로 하고 있으며, 위 발명들은 이동전화단말기에 이용될 수 있는 문자입력방식에 관한 발명이므로 피고회사의 업무범위에 속한다 할 것이다. 또한 위 각 발명 당시 원고의 직무는 정보통신부분의 신상품 개발을 위한 아이디어를 창출하는 것으로 실제 한글입력방식에 관한 아이디어 계발에 주력한 결과 제1, 2발명에 이르게 되었으므로 위 각 발명 행위는 원고의 직무에 속한다 할 것이다.

따라서 제1, 2발명은 직무발명에 해당한다고 보아야 할 것이므로, 위 발명들이 직무발명이 아님을 전제로 각 양도계약의 효력을 다투는 원고의 주장은 더 나아가 살필 것 없이 이유 없다.

(2) 원고는 또한, 제2발명에서는 피고회사가 원고로부터 발명에 관한 권리를 승계한 때로부터 4개월이 지나서 특허를 출원하였으므로 이는 발명진흥법 제11조 제1항에 의하여 자유발명으로 간주되고, 같은 조 제2항에 따라 발명자인 원고로부터 통상실시에 대한 동의를 받지 아니한 이상 피고는 원고에게 통상실시료 상당의 부당이득을 반환하여야 한다고 주장한다.

살피건대, 발명진흥법 제11조는 사용자 등이 직무발명에 관한 권리를 승계한 후 대통령령이 정하는 기간(같은 법 시행령 제5조는 그 기간을 4개월로 정하고 있다) 내에 출원을 하지 아니하는 경우 또는 서면으로 그 출원을 포기한 경우 당해 발명은 자유발명으로 보고(제1항), 자유발명으로 보는 직무발명에 대하여는 특허법 제39조 제1항의 규정에도 불구하고 당해 발명을 한 종업원 등의 동의를 받지 아니하고는 통상실

시권을 가질 수 없다(제2항)고 규정하고 있고, 피고회사가 원고로부터 제2발명에 관한 권리를 승계한 1994. 10. 13.로부터 4개월이 경과한 1995. 5. 11.에야 위 발명에 관한 특허를 출원한 사실은 앞에서 본 바와 같다.

그러나 가사 위 법률규정에 의하여 제2발명에 관한 양도계약이 무효가 되어 피고회사가 특허를 받을 권리를 가지지 아니함에도 불구하고 그 명의로 특허등록을 마쳤다 하더라도 원고가 그와 같은 사유를 들어 특허무효심판을 청구함은 별론으로 하고 특허무효심결이 확정되기 전에는 피고 명의로 등록된 특허권의 무효를 주장할 수는 없는 것이므로 피고는 특허권자로서 적법하게 그 발명을 실시할 권리가 있고, 또한 원고가 자기 명의로 특허등록을 받지 아니한 이상 피고회사가 위 발명을 실시함에 있어 원고의 동의를 얻어야 한다고 볼 수도 없으므로, 원고의 위 주장은 이유 없다.

SCHEDULE A

	1 MBHB Reference No.	2 Title	3 Inventor(s)	4 U.S. Application No.	5 U.S. Filing Date	6 Korean Application No.	7 Filing Date (Korean Application)	8 PCT Application No.	9 Filing Date PCT National Phase
1	05-386-B	Method For Stabilizing BTS Using E1 Trunk Board Duplexing Of BSC	Se Yeon KIM	10/545,922	August 17, 2005	2003-0018549	March 25, 2003	PCT/KR2004/00645	March 24, 2004
2	05-390-B	Method For Optimizing A DSP Input Clock Using A Comparing/Analyzing Circuit	Seong Chul SHIN	10/545,505	August 12, 2005	2003-0018553	March 25, 2003	PCT/KR2004/00655	March 24, 2004
3	05-392-B	Method For Trunk Line Duplexing Protection Using A Hardware Watchdog	Yeong Weon JUNG	10/545,895	August 17, 2005	2003-0018554	March 25, 2003	PCT/KR2004/00654	March 24, 2004
4	05-428-B	Device for Implementing a RNC Using LVDS	Kyung Hwan AN	10/559,738	December 6, 2005	2003-0051165	July 24, 2003	PCT/KR2004/01858	July 23, 2004
5	05-428-C	Device for Implementing a RNC Using LVDS	Kyung Hwan AN	11/534,965	September 25, 2006	2003-0051165	July 24, 2003	PCT/KR2004/01858	July 23, 2004
6	05-429-B	Method of Allocating Links in a IX EVDO System	Kye Chol CHO	10/560,297	December 12, 2005	2003-0051466	July 25, 2003	PCT/KR2004/01880	July 26, 2004
7	05-432-B	Method for Downloading a Single Firmware Image File to Client Systems Having Different CPU Modules	Chan Soo PARK	10/559,225	December 6, 2005	2003-0051153	July 24, 2003	PCT/KR2004/01853	July 23, 2004
8	05-432-C	Method for Downloading a Single Firmware Image File to Client Systems Having Different CPU Modules	Chan Soo PARK	11/534,970	September 25, 2006	2003-0051153	July 24, 2003	PCT/KR2004/01853	July 23, 2004

SCHEDULE A

	MBHB Reference No.	Title	Inventor(s)	U.S. Application No.	U.S. Filing Date	Korean Application No.	Filing Date (Korean Application)	PCT Application No.	Filing Date PCT National Phase
9	05-433-B	Method for Unifying Operations of Boards by Using Logical Addresses Thereof	Yoon Mi HWANG	10/559,235	December 6, 2005	2003-0051155	July 24, 2003	PCT/KR2004/01855	July 23, 2004
10	05-433-C	Method for Unifying Operations of Boards by Using Logical Addresses Thereof	Yoon Mi HWANG	11/534,960	September 25, 2006	2003-0051155	July 24, 2003	PCT/KR2004/01855	July 23, 2004
11	05-434-B	Method for Establishing an ATM Traffic Channel Path Between a BSC and a BTS in an EV-DO System	Woo Seog KOO	10/560,142	December 9, 2005	2003-0051157	July 24, 2003	PCT/KR2004/001856	July 23, 2004
12	05-438-B	ATM Switch for use in W-CDMA	Cheol Hyun JANG	10/545,578	August 16, 2005	2003-0018557	March 25, 2003	PCT/KR2004/00658	March 25, 2004
13	05-439-B	Remote Unit for Adding Frequency Assignments to a Separation-Type Base Transceiver Station	Jae Ick LEE	10/556,267	November 14, 2005	2003-0034799	May 30, 2003	PCT/KR2004/01276	May 28, 2004
14	05-476-C	Apparatus and Method for Tracking the Position/Object Using a Mobile Communication Network	Choon Geun CHO	10/567,529	February 7, 2006	2003-0066875	September 26, 2003	PCT/KR2004/02466	September 24, 2004
15	05-496-C	Method of Controlling Power in a CDMA-2000 System	Tae Ik SONG	10/568,234	February 14, 2006	2003-0067736	September 30, 2003	PCT/KR2004/02469	September 24, 2004
16	05-497-C	Method of Controlling Power in a W-CDMA Mobile Communication System	Dong Keun KIM	10/569,046	February 22, 2006	2003-0067737	September 30, 2003	PCT/KR2004/02470	September 24, 2004

SCHEDULE A

	MBHB Reference No.	Title	Inventor(s)	U.S. Application No.	U.S. Filing Date	Korean Application No.	Filing Date (Korean Application)	PCT Application No.	Filing Date PCT National Phase
17	05-498-C	Method of Controlling Data Rate for a Forward Data Service in a CDMA 2000-1X System	Jung Han LEE	10/569,041	February 22, 2006	2003-0067738	September 30, 2003	PCT/KR2004/02471	September 24, 2004
18	05-500-B	ATM Switched Router for Transmitting IP Packet Data	Jung Hee PARK	10/585,586	July 11, 2006	2004-0002981	January 15, 2004	PCT/KR2005/00133	January 14, 2005
19	05-507-B	Apparatus and Method for Dualizing an Asynchronous Transfer Mode (ATM) Router in a CDMA2000 System	Tae Hong KIM	10/585,602	July 11, 2006	2004-0002973	January 15, 2004	PCT/KR2005/00134	January 14, 2005
20	05-509-B	Method for Correcting Time Data in a Network Management Application Using a SNMP	Sang Dae PARK	10/586,086	July 13, 2006	2004-0002979	January 15, 2004	PCT/KR2005/00138	January 14, 2005
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	MBHB Reference No.	Title	Inventor(s)	U.S. Application No.	U.S. Filing Date	Korean Application No.	Filing Date (Korean Application)	PCT Application No.	Filing Date PCT National Phase
23	05-518-B	Structure of a Management Information Base Communicated Between a Network Management System and an Agent of a Network Element	Kwang Seok KANG	10/585,838	July 12, 2006	2004-0002983	January 15, 2004	PCT/KR2005/00141	January 14, 2005
24	05-595-B	Method of Distributing Network Traffic in a Mobile Communication System	Hyun Young SHIN	10/556,924	November 14, 2005	2003-0035283	June 2, 2003	PCT/KR2004/01310	June 2, 2004
25	05-597-B	System and Method for Tracking Position of a Mobile Unit Using Beacons in a Mobile Communications System	June Man KIM	10/560,664	December 13, 2005	2003-0050916	July 24, 2003	PCT/KR2004/01851	July 23, 2004
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